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WHAT TO DO  
IN  
CASES OF POISONING

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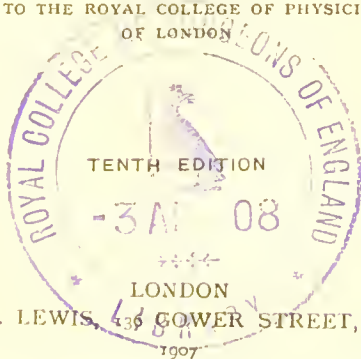
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WHAT TO DO  
IN  
CASES OF POISONING

BY

WILLIAM MURRELL, M.D., F.R.C.P.

PHYSICIAN TO THE WESTMINSTER HOSPITAL; LECTURER  
ON CLINICAL MEDICINE AND JOINT LECTURER  
ON THE PRINCIPLES AND PRACTICE OF  
MEDICINE; EXAMINER IN MATERIA MEDICA IN THE  
UNIVERSITY OF ABERDEEN;  
LATE EXAMINER IN THE UNIVERSITIES OF EDINBURGH  
AND GLASGOW  
AND TO THE ROYAL COLLEGE OF PHYSICIANS  
OF LONDON



H. K. LEWIS, 436 GOWER STREET, W.C.

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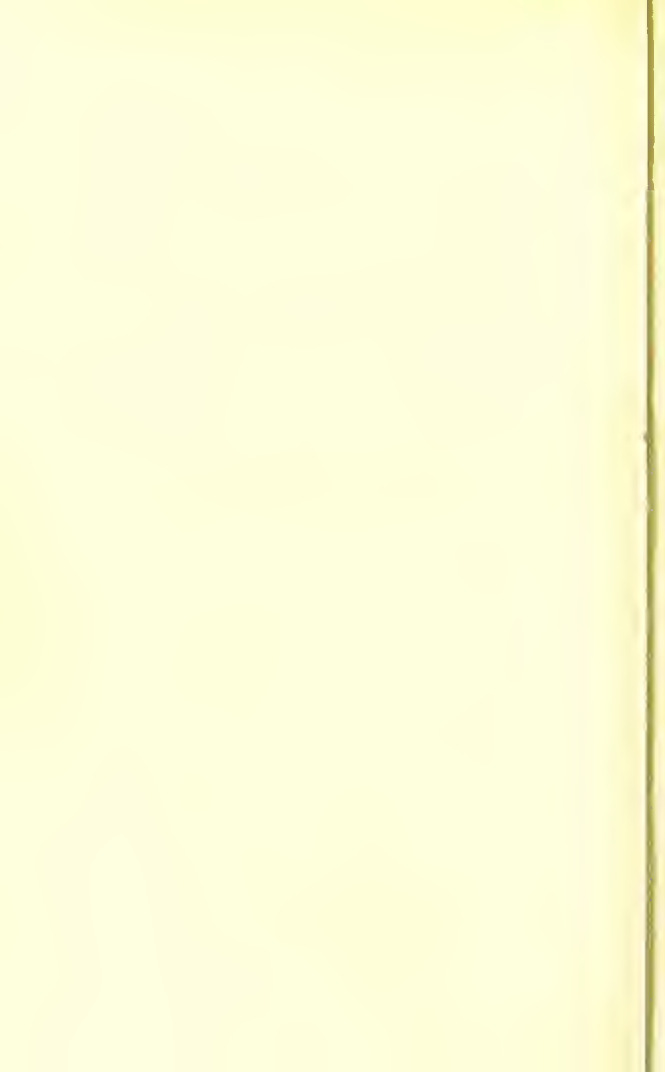
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THIS WORK  
IS DEDICATED TO THE  
**Coroners of England**

WITH MANY APOLOGIES FOR THE PECUNIARY LOSS  
THEY MUST HAVE SUSTAINED  
FROM ITS PUBLICATION BY  
THE AUTHOR.



## PREFACE.

A NEW edition of this book having been called for, the opportunity has been taken of submitting it to a process of thorough revision, restoration and renovation. All previous editions are cancelled, and people using them do so at their own risk. The present issue, although somewhat reduced in size by a better arrangement of type, contains a great deal of new matter. Many new poisons have been introduced, some of them of considerable potency. Patients contemplating unusual combinations for suicidal purposes are requested to communicate with the Author, in order that the requisite directions for treatment may be introduced into the next edition. Until then they should do nothing, as precipitate action might prove detrimental to the interests of an otherwise deserving publication.

WILLIAM MURRELL.

17, Welbeck Street,  
London, W.  
*May, 1907.*



# WHAT TO DO IN CASES OF POISONING.

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## INTRODUCTION.

IF sent for to a case of poisoning go at once—the patient's life may depend on your prompt attendance. If at night, do not stop to dress—scanty attire is permissible on these occasions.

Take your Antidote Bag or Case with you. If you have neglected to provide yourself with one, lose as little time as possible in hunting about for what you want. Do not go without a stomach-tube, and remember that you will require your hypodermic syringe, and very likely a solution of atropine. Your knowledge of the treatment of cases of poisoning may be excellent, but if you are without the requisite appliances you are of no use.

Enquire of the messenger what is the matter.

His information will probably be unreliable, but you may get a hint that will enable you to decide at once on a plan of action.

Go straight to your patient and do not waste time in talking to the friends.

Make your diagnosis as quickly as you can, and commence treatment at once. If in doubt you will probably not be far wrong in giving a hypodermic injection of apomorphine or some other good emetic.

Order at once everything you are likely to require and send for anything you may have forgotten, so that there may be as little delay as possible.

If the room is full of people get rid of them, or they will hamper your movements. Do not try to turn them out or they will make a scene and add to your troubles, but give them something to do—tell them to go and make coffee, for example.

If you notice vomited matter, put it in a cupboard or other safe place when you have time; it may be wanted. Take charge of any bottles that may be about, even if they are empty.

Time is of the utmost importance, but try and avoid all appearance of hurry and give your orders quietly and calmly.

Never regard a case as hopeless. In every case if you see the patient early and have the requisite appliances at hand there is a good chance of recovery. In children and those enfeebled by disease the prognosis is not so good. When the drug has been taken hypodermically it is an awkward complication.

Do not relax your endeavours because at first your efforts are unavailing. You may have to work away for three or four hours before there is much improvement.

Should you have a consultation? This is a difficult question to answer, so much depends on the particular circumstances of the case. If you are quite sure of yourself and know you can pull your patient through, the fewer people you have the better; but if the issue is doubtful it is a great help to have a friend who will not only give you the benefit of his advice but share the responsibility. You cannot pay a man a greater compliment than to call him in in consultation in a case like this. Often enough it is not only the patient's life, but the family reputation which is at stake.

Do not leave your patient alone even when he has apparently recovered. Often enough as the circulation improves the symptoms re-

appear, probably from reabsorption of the poison. When there is a suicidal tendency there may be a renewed attempt in some other form.

Be sure of your diagnosis. Some time ago I was called in to see a young lady who was said to have attempted suicide—it was a love affair—with laudanum. I applied the stomach-pump without a moment's delay and then enquired how much she had taken. They said "a large quantity—two doses," so I used the stomach-pump again. I could not detect any smell of laudanum, so I asked how much she had taken altogether, when I found to my disgust that it was only six drops! I gave a favourable prognosis and went home.

Be cautious in giving a diagnosis, especially if you yourself are not very sure what is the matter, and be still more cautious in giving a prognosis. It is not a wise thing to endeavour to calm the friends by telling them there is "no danger," or that he "will be all right soon," for you may prove a false prophet, and they will not readily forgive you.

When you get home jot down a few notes of what happened, noting especially time, doses, &c. The circumstances are fresh in your



memory, and if you fail to take this precaution you will find to your cost how quickly things are forgotten.

It is possible that you may experience a difficulty in remembering the antidotes to the various poisons. If so, rest assured that your knowledge of pharmacology is defective. All rational treatment of cases of poisoning is founded on a correct appreciation of the physiological action of drugs.

## THE CLASSIFICATION OF POISONS.

Poisons may be classified in many ways, but no perfect systematic arrangement has as yet been devised. The following scheme has been suggested :—

- I. Poisons which produce death immediately.
- II. Irritant poisons.
- III. Irritant and Narcotic Poisons.
- IV. Poisons which act chiefly on the Nervous System, such as the Narcotics, Delirians and Convulsants.

Professor Kobert of Dorpat divides poisons into the following groups:—

**I. Blood Poisons.**

- II. Those which produce gross anatomical changes.
- III. Those which produce no such changes.

In a special group by themselves he includes the **Poisonous Products of Tissue Change** such as are produced by poisons developed in food, and auto-poisoning, of which uræmia, glycosuria and oxaluria are examples.

In the *Nomenclature of Diseases*, published by the Royal College of Physicians of London (1906), poisons are classified according to their origin or source. There is a preliminary recommendation that in certifying cases of poisoning the precise nature of the agent employed should be stated, and that a distinction should be made between acute and chronic poisoning. The following groups are recognized:—(1) Metals and their salts, (2) Caustic Alkalies, (3) Non-metals and their compounds, (4) Acids and acid salts, (5) Organic substances, (6) Vegetable poisons, (7) Animal poisons, (8) Poisonous foods, (9) Poisonous gases and vapours, (10) Mechanical irritants. In the group of animal poisons are included the venoms of

snakes, scorpions, centipedes, stinging insects and fish. The mechanical irritants are pounded glass, steel filings, and diamond dust.

## THE DIAGNOSIS OF CASES OF POISONING.

THERE are grounds for suspecting that a person has been poisoned when :—

1. The symptoms come on suddenly and in the midst of apparent health.
2. The symptoms are observed immediately after a meal or after taking food or drink or medicine.
3. Several people who have partaken of the same article are simultaneously seized with similar symptoms.

The circumstances affecting or modifying the action of a poison are :—

1. Tolerance or Habit.
2. Idiosyncrasy.
3. Age and condition of health.
4. Form of administration and mode of introduction into the system.

How can you tell from what poison the

patient is suffering? Sometimes nothing is more easy, whilst at others it is extremely difficult to arrive at a correct conclusion. A search for the bottle which contained the poison, or an enquiry of the nearest chemist may help you, whilst a knowledge of the sufferer's habits and disposition may prove of some assistance. The diagnosis is not always so easy as it looks at first sight. For example, you are called in to a patient who is evidently suffering from the effects of some narcotic poison, and on a table close at hand you find a hypodermic syringe, and a bottle of morphine: you conclude at once that it is a case of morphine poisoning, but you may be wrong. The patient had intended to kill himself that way, but dreading the trifling pain of the puncture, or not being expert in the use of the syringe, changed his mind at the last moment, took 300 grains of chloral and threw the bottle under the grate. (For hint as to mode in which death by suicide may be made to simulate death from natural causes see death of Gammon, in Warren's *Ten Thousand a Year*.)

Do not forget the possibility of a number of poisons having been taken together. In one case a patient adopted a curious combination—a packet of Battle's Vermin Killer, two

drachms of laudanum, and then half a drachm of red precipitate.

It is astonishing what a fashion there is in poisons for suicidal purposes. A few years ago people were satisfied with ordinary domestic poisons such as sugar of lead, but now the rage is for the new synthetical compounds. It is necessary to exercise a certain amount of discretion in these matters. A friend of mine—it was a love affair—tried to commit suicide by taking a corn-solvent. It did him no harm, but he had to leave the country. Reconciliation after such an exhibition of incompetence was out of the question.

It is a good plan to make yourself acquainted with the composition of those patent medicines which possess active properties. There is no royal road to diagnosis, and the only way to arrive at a correct conclusion is to utilize your knowledge of the pharmacological action of drugs. The following lists may be of some use, but no attempt has been made to render them complete, and they must be taken as being merely suggestive:—

### **I. Patient Dead.**

1. PRUSSIC ACID. Death in a few minutes at the outside.

2. CYANIDE OF POTASSIUM. Usually kills very quickly.
3. STRONG AMMONIA. May kill in a few minutes.
4. CARBONIC ACID GAS. If pure may kill almost at once.
5. CARBONIC OXIDE.
6. OXALIC ACID. Often kills quickly.

Almost any active poison if given in a very large dose.

## II. Patient Comatose.

1. OPIUM ; MORPHINE.
2. ALCOHOL.
3. CHLORAL.
4. CHLOROFORM.
5. CAMPHOR.

## III. Patient Collapsed.

STRONG ACIDS—CARBOLIC ACID, OXALIC ACID ;  
ALKALIES ; ACONITE ; ANTIMONY ; ARSENIC ;  
TOBACCO ; LOBELIA ; ANTIPYRIN ; ANTIFE-  
BRIN. Most poisons towards the last.

## IV. Patient Cyanosed.

ANILINE ; ANTIFEBRIN ; EXALGIN.

## V. Patient Delirious.

BELLADONNA (noisy, pleasing delirium, "the insane root that takes the reason prisoner") ;  
HYOSCYAMUS ; STRAMONIUM ; CANNABIS  
INDICA ; ALCOHOL ; CAMPHOR.

**VI. Patient Tetanised.**

NUX VOMICA; STRYCHNINE (think of Vermin Killers); ANTIMONY; ARSENIC. There may be a condition approaching tetanus from excess of pain—in poisoning by strong AMMONIA, for example.

**VII. Patient Paralysed.**

PHYSOSTIGMA; CONIUM (from below upwards); GELSEMIUM; ACONITE; ARSENIC; LEAD.

**VIII. Pupils Dilated.**

BELLADONNA and ATROPINE; HYOSCYAMUS; STRAMONIUM; OPIUM (in last stage); ACONITE; ALCOHOL; CHLOROFORM (when taken in liquid form); CONIUM.

**IX. Pupils Contracted.**

OPIUM (to a pin's point if large dose taken); PHYSOSTIGMINE; CHLORAL (during sleep); CARBOLIC ACID.

**X. Skin Dry.**

BELLADONNA and ATROPINE; HYOSCYAMUS; STRAMONIUM.

**XI. Skin Moist.**

OPIUM; ACONITE; ANTIMONY; ALCOHOL; TOBACCO; LOBELIA. Almost any poison during the stage of collapse.

**XII. Rash on the Skin.**

The presence of a rash on the skin may be

of essential value as an aid to diagnosis, but at the same time it must be remembered that a particular rash may be produced by several different drugs and that the same drug does not always bring out the same rash.

BELLADONNA, STRAMONIUM, HYOSCYAMUS and other members of this group produce a rash which may be either erythematous or scarlatiniform. It may be followed by desquamation.

BROMIDE of POTASSIUM and the other bromides produce an acne which may go on to the formation of boils or ulcers. It is seen chiefly on the face and back.

IODIDE of POTASSIUM and the other iodides may be followed by papules quickly becoming pustular and resembling acne, or by a petechial rash, the latter chiefly on the legs.

COPAIBA may induce an urticaria or a rash like measles, in the form of bright red discrete stains, gradually spreading all over the body and accompanied by itching and tingling.

CUBEBS produces a similar rash.

ARSENIC brings on an eczema, but the eruption may be petechial, papular, vesicular



or pustular. In chronic cases there is a brown discoloration or pigmentation of the skin.

ANTIMONY is followed by a pustular rash, like small-pox.

CHLORAL HYDRATE produces an erythema occurring at first in spots but afterwards more diffusely. Its earliest manifestation is on the head, but soon it spreads all over the body, following the course of the greater nerve tracks. Butyl-chloral-hydrate even in moderate medicinal doses may also excite an erythema.

PHENAZONE (ANTIPYRIN) causes an urticaria commencing on the inner side of the thighs and extending over the abdomen. It is accompanied by itching. SALICYLIC ACID may be followed by diffuse erythema with œdema of the eyelids.

OPIUM and MORPHINE exceptionally bring out urticaria or papulous or roseolous patches accompanied by itching. QUININE also exceptionally brings out an erythema attended by distressing itching and tingling. COD LIVER OIL may be followed by an acne from the elimination by the skin of some of its acrid principles.

Croton oil, tartar emetic, sulphur and arnica are well-known rash-producers when applied locally, and the acne of Tar is familiar.

The discoloration of the skin resulting from the local application of chrysophanic acid and the dark-grey coloration from the long-continued administration of nitrate of silver—"argyria"—require no detailed notice.

ANTITOXIC SERUMS induce an erythema usually commencing at or near the seat of injection and attended with much itching.

ENEMA rashes are usually urticarial and are probably due to the absorption of ptomaines from the rectum.

It should be noted that in several instances the same drug is responsible for many different forms of eruption. Few are specific, but arsenic alone produces herpes zoster, and only arsenic and silver produce a permanent discoloration of the skin.

### **XIII. Smell of Drug in the Breath.**

PRUSSIC ACID; LAUDANUM; ALCOHOL (brandy, whiskey, &c.); CARBOLIC ACID; ACETIC ACID; AMMONIA; CHLOROFORM; CREASOTE; IODINE; PHOSPHORUS; CAMPHOR; NITRO-BENZOLE. The smell is not always a reliable

guide ; for example, laudanum is not uncommonly taken in porter.

#### **XIV. Mouth and Tongue Dry.**

BELLADONNA and ATROPINE ; HYOSCYAMUS ; STRAMONIUM ; OPIUM.

#### **XV. Salivation.**

ARSENIC ; AMMONIA ; CANTHARIDES ; EXALGIN.

Most drugs which produce a corrosive action on the mucous membrane of the mouth or œsophagus. Mercury, jaborandi and muscarin may also be mentioned.

#### **XVI. Mouth Bleached.**

1. CARBOLIC ACID. Mucous membrane white and hard.
2. OXALIC ACID. Mucous membrane of tongue, mouth and pharynx whitened.
3. AMMONIA. Epithelium coming off in flakes.
4. POTASH ; SODA.
5. NITRIC ACID. White soft or yellow.
6. CORROSIVE SUBLIMATE.

The numbness of the lips, mouth and tongue produced by aconite will not be forgotten.

#### **XVII. Patient Vomiting.**

1. ARSENIC. Brown, mixed with blood.
2. ANTIMONY. White stringy mucus, may be tinged with blood.

3. DIGITALIS. Vomited matter has a grass-green colour.
4. ACONITE.
5. COLCHICUM.
6. COLOCYNTH. And is freely purged.
7. AMMONIA. Stringy saliva mixed with blood; fumes with hydrochloric acid.
8. PHOSPHORUS. Vomited matter luminous in the dark.

### **XVIII. Patient Purged.**

ARSENIC (continuous with much pain, stools mixed with blood); ANTIMONY; CORROSIVE SUBLIMATE (green in colour, mixed with blood); CANTHARIDES (blood and slime); DIGITALIS; COLCHICUM; COLOCYNTH.

### **XIX. Colic.**

LEAD (chiefly in region of navel, eased by pressure); COPPER; ARSENIC; COLOCYNTH.

### **XX. Cramp.**

ARSENIC; ANTIMONY; LEAD.

### **XXI. The Urine is Coloured.**

Blue urine is due to the administration of methylene-blue, tetra-methyl-thionine chloride, given as a practical joke or in the treatment of gonorrhœa and cystitis. Green urine is the result of the mixture of methylene-blue and yellow urines. Exceptionally

a blue urine may be due to indigo or indican.

Black or olive-green urines may result from the administration of carbolic acid or salicylic acid. *Café-au-lait* urines are met with in melaniasis.

Cherry-red or port-wine urines are due to hæmoglobinuria or hæmatoporphyrinuria, the latter from administration of sulphonal, trional or tetronal.

Red and purple urines apart from lithates follow the administration of purgen or dihydroxy-phthalo-phenone, commonly called phenol-phthalein. This drug is used as a purgative under various fancy names. Rhubarb colours the urine reddish-yellow, changing to a purple-red on the addition of an alkali. Santonin colours the urine orange, which changes to a brilliant scarlet on the addition of ammonia. Purgatin, which is anthrapurpurine diacetate, also colours the urine red. Pyoktanin or methyl-violet produce a reddish-violet urine, and fuchsine or pararosaniline also colour the urine bright purple, but if present in small quantities olive-green. Most of these urines show characteristic spectra

by which they are readily recognized (Murrell and Wilson Hake, *Edinburgh Medical Journal*, June, 1906).

## **XXII. Drug given Hypodermically.**

MORPHINE; ATROPINE; STRYCHNINE.

## **XXIII. Poison Inhaled.**

AMMONIA; PRUSSIC ACID; CHLOROFORM;  
ETHER; BENZINE; CARBONIC ACID GAS;  
CARBONIC OXIDE; COAL GAS; SEWER GAS,  
CESSPOOL GAS and EMANATIONS.

## **XXIV. Poisons commonly used for Murder.**

ARSENIC; ANTIMONY; ACONITE; DIGITALIS;  
OPIUM; STRYCHNINE.

## **XXV. Poisons commonly employed for Suicidal Purposes.**

CARBOLIC ACID and its preparations (commonest of all poisons); OPIUM and its preparations;  
OXALIC ACID; RAT PASTE; PRUSSIC ACID;  
CHLORAL; SUGAR OF LEAD; STRYCHNINE.  
Patent medicines of all kinds unintentionally.

## **XXVI. Drugs employed as Abortifacients.**

ERGOT; RUE; GIN and PENNYROYAL; SAVINE;  
BITTER APPLE (*Colocynth*, very popular);  
HICKERY PICKERY (*Hiera Picra* or Holy

Bitter, a mixture of four parts of aloes and one of canella bark); SPANISH FLY (*Cantharides*); YEW TREE TEA; GREEN TEA in large quantities.

QUININE is supposed to exert a specific action on the pregnant uterus, but that it does so I do not for one moment believe, given, that is to say, in ordinary tonic doses. I have frequently given pregnant women suffering from malaria large doses of quinine without in any way disturbing their uterine arrangements. Two five-grain compound colocynth pills at bed-time would be far more likely to do harm.

ACTÆA RACEMOSA (*Cimicifuga racemosa*) is sometimes said to be an abortifacient, but there is very little truth in the statement; at all events half a drachm of the tincture three times a day is safe enough even in the later months of pregnancy.

PULSATILLA is supposed to be capable of producing abortion, but this again rests on very imperfect evidence.

PARSLEY is also said to be useful. The usual directions are :—"A handful of parsley chopped fine in a bottle of gin, allowed to stand a week, and a wineglassful three times

a day." How far this proves efficacious I do not know, but the *rationale* is clear enough, parsley containing apiol, which is reputed to be a powerful oxytocic.

My own belief is that there is no satisfactory evidence to show that any drug or combination of drugs employed alone, that is to say without mechanical assistance, is capable of producing abortion except perhaps in the case of those exceptionally gifted women who have been so often pregnant that they abort almost as soon as they are looked at.

#### XXVII. Indigenous Poisonous Plants.

Woody Nightshade (*Solanum dulcamara*); Garden Nightshade (*Solanum nigrum*); Deadly Nightshade (*Atropa belladonna*); Aconite, Monkshood, Wolfsbane or Blue Rocket (*Aconitum napellus*); Foxglove (*Digitalis purpurca*); Spotted Hemlock (*Conium maculatum*); Arum (*Arum maculatum*); Colchicum (*Colchicum autumnale*); Bryony (*Bryonia dioica*); Henbane (*Hyoscyamus niger*); Fly Agaric (*Amanita muscaria*); Mezercon or Spruce Olive (*Daphne mezereum*); Laburnum (*Cytisus laburnum*); and a host of others. These



are figured in Stephenson and Churchill's *Medical Botany*, and in Bentley and Trimen's *Medicinal Plants*.

## CONSTITUENTS OF POPULAR PATENT PREPARATIONS.

THE following list is published without prejudice and its absolute correctness is not guaranteed, although every reasonable precaution has been taken in its compilation. Most of these remedies are easily analysed, but some contain flavouring agents and small quantities of vegetable extracts which are not readily identified. Again, the formula of many of them in a long series of years has undergone modification. The tendency once a reputation is established is to leave out the active ingredients. This is done not so much from motives of economy as to avoid risk. The successful business man desires to trouble the coroner as little as possible.

**The Purgative Aperient and Liver Pills** form a class by themselves. *Beecham's* contain aloe, ginger and soap. *Carter's Little Liver Pills*, podophyllin and aloe. *Cockle's*, aloe,

colocynth and rhubarb. *Holloway's*, aloes, jalap, ginger and myrrh; or, according to another analysis, aloes, rhubarb, saffron, sulphate of sodium and pepper. *Kitchener's Peristaltic Persuaders* are apparently compound rhubarb pill with a little caraway. *Morison's Pills*, aloes and colocynth. *Norton's Chamomile Pills*, aqueous extract of aloes, extract of gentian and essential oil of chamomile. *Parr's Life Pills*, aloes, rhubarb, jalap, extract of gentian, oil of cloves and soft soap. *Scott's Pills*, aloin, cascara and soap.

Most of the "dinner pills" contain extract of Barbadoes aloes 2 grains, extract of nuxvomica  $\frac{1}{2}$  grain, and extract of gentian  $1\frac{1}{2}$  grains. *Lady Webster's Pills* contain powdered Socotrine aloes 2 grains, powdered mastich  $\frac{1}{2}$  grain, powdered red rose leaves  $\frac{1}{2}$  grain, with syrup of wormwood. *Bile Beans* contain cascara, rhubarb, liquorice, and oil of peppermint.

*Blair's Gout Pills*, which belong to a different category, are said to consist of practically nothing but finely ground colchicum corms. *Valetté's Pills* contain sulphate of iron, carbonate of sodium, honey and syrup. *Pink Pills*, sulphate of iron, an alkaline carbonate and liquorice, coated with sugar and coloured with carmine.

Many other iron pills have a similar composition.

**Saline Aperients.** *Eno's Fruit Salt*, bicarbonate of sodium, tartaric acid and citric acid. *Lamplough's Pyretic Saline*, bicarbonate of potassium and sodium with citric acid.

The active constituent of *Clarke's Blood Mixture* is iodide of potassium. *James' Fever Powder*, the original formula of which the *Pulvis Antimonialis* this is an imitation, contains antimony and phosphate of lime. *Anti-Fat*, *Fucus vesiculosus* or bladder wrack. "*Fluid Lightning*," an American application for neuralgia, aconitine, with essential oil of mustard, glycerine, and alcohol. *Neuraline*, aconite with chloroform and rose-water. *St. Jacob's Oil*, turpentine, ether, alcohol, carbolic acid, capsicum, aconite and a small quantity of origanum. *Perry Davis' Painkiller*, spirits of camphor, tincture of capsicum, tincture of guaiacum, tincture of myrrh and alcohol. *Brown's Bronchial Troches*, cubebs, conium, acacia, liquorice and sugar. *Holloway's Ointment*, fresh butter, beeswax, yellow resin, vinegar of cantharides, Canada balsam, expressed oil of mace and balsam of Peru or liquid storax. It is said that "no two samples are precisely of the same colour or consistence." *Mrs. Winslow's*

*Soothing Syrup*, morphia with essence of anise and syrup of balsam of tolu. *Mother's Friend*, opium with carminatives. *Indian Tincture*, capsicum, cannibis indica, ether and methy-  
lated spirit. *Mother Seigel's Curative Syrup*, concentrated compound decoction of aloes with borax, capsicum, gentian, oil of sassafras, oil of winter green, taraxacum, treacle and rectified spirit. *Reynold's Gout Specific*, colchicum. *Injectio Brou*, sulphate of zinc, sugar of lead, landanum tincture of catechu and water. *Locock's Pulmonic Wafers*, lactucarium, ipecacuanha and squills. *Eau de Fleurs de Lys*, "an infallible banisher of freckles," a milky fluid consisting of two and a half per cent. of calomel, a trace of corrosive sublimate and common salt, with water scented with orange flowers. *Eau de Blanc de Perles*, an alkaline fluid with a thick deposit of about fifteen per cent. of carbonate of lead, scented with otto of roses and geranium. *Lait de concombres* consists of soap, glycerine and cotton-seed oil made into a semi-emulsion with rose water. *Keating's Cough Lozenges*, lactucarium, ipecacuanha, squills, extract of liquorice, sugar, and mucilage of tragacanth. *Ruspini's Styptic*, a strong solution of gallie acid in spirit of roses and perhaps a little sulphate of

zinc. *Roche's Embrocation*, olive oil mixed with oil of amber, oil of cloves and oil of lemons. *Holl's Specific* (for whooping cough), also known as *Hooper's*, is said to contain half a grain of tartar emetic in the dose. *Cohosh* is *Actæa racemosa* or *Cimicifuga*. *Hamlin's Wizard Oil* contains camphor, ammonia, sassafras, cloves, chloroform, turpentine, and spirit. *Haarlem Oil* is a mixture of balsam of sulphur, Barbadoes tar, oil of amber, oil of turpentine, and linseed oil. *Barker's Poisoned Wheat* for killing birds owes its poisonous properties to *Cocculus indicus*. *Spirone* used as an inhalation in consumption and bronchitis is a two per cent. solution of iodide of potassium mixed with glycerine and acetone. *Warner's Safe Cure* was found to contain in each bottle extract of *Lycopus virginicus* 20 grammes, extract of *hepatica* 15 grammes, extract of *gaultheria* half a gramme, nitre  $2\frac{1}{2}$  grammes, alcohol 80 grammes and glycerine 40 grammes, the rest being water.

## THE PRESERVATION OF SPECIMENS.

If it is determined to submit the vomited matter, the contents of the stomach or portions of the viscera to a chemical expert for analysis, it is necessary that they should be preserved according to certain rules.

1. They should be placed in wide-mouthed glass bottles, previously cleansed by scouring them with sand, rinsing with strong hydrochloric acid and then thoroughly washing out with water.

2. No antiseptic of any kind should be added.

3. The mouths of the bottles should be covered with oil-silk and not with calico, linen or paper.

4. A label should be attached, bearing the name of the deceased, the nature of the contents, the date of removal and the signature of the medical attendant.

In forwarding the specimens it would be as well to state the nature of the symptoms observed so as to afford the analyst some clue as to the nature of the poison he is to look for ; but this is not essential.

Whether the medical man should make a chemical investigation himself will depend partly on the opportunities at his disposal and partly on his familiarity with the modes of investigation required, but in any case he should not use more than half the material.

In some cases the tests are chiefly chemical and in others almost entirely physiological. An analytical chemist is as a rule not the best man to undertake a pharmacological investigation.

## THE ANTIDOTE CASE.

THE ANTIDOTE CASE should contain every drug and instrument required in cases of poisoning. It is to the Toxicologist what the Midwifery Bag is to the Obstetrician. It should be kept filled ready for use, so that in case of emergency the doctor simply takes or sends for his bag, and wastes no time in looking for stray bottles or instruments when every moment is of importance.

An Antidote Case or Cupboard should be kept at every police station and dispensary and in the casualty room of every hospital. It is a

good plan to inspect the case at intervals to see that everything is in working order. The piston of the hypodermic syringe always works badly if not looked after.

An Antidote Bag or Case should contain :—

#### **A. Instruments.**

1. Stomach-pump or stomach-tube, which might also be used as an enema apparatus. A soft india-rubber tube is infinitely preferable to the cumbersome stomach-pump and answers every useful purpose. There should be a small œsophagus tube for children.
2. Hypodermic syringe. A cap at the end to prevent the piston from getting dry is essential, and the needles should be wired.
3. Flexible catheter, No. 8.
4. A mouth gag.

#### **B. Emetics.**

1. Sulphate of Zinc in half-drachm powders, one or two to be given in hot water, repeated if necessary.
2. Powdered Ipecacuanha in twenty grain powders; one or two to be given in water.



3. Apomorphine in one-tenth grain tablets or a one per cent. solution of the hydrochlorate in water. One tablet or ten drops hypodermically.

### C. Stimulants.

1. Brandy, four ounces.
2. Sal volatile, four ounces.
3. Chloric ether, four ounces.
4. Coffee in  $\frac{1}{4}$ -lb. tin ; to be used as an enema in poisoning by opium or other narcotics.

Caffeine may be substituted for the coffee. The best solution for hypodermic use is made by dissolving 20 grains of caffeine and  $17\frac{1}{2}$  grains of salicylate of sodium in a drachm of water. It contains a grain in three minims, and six minims should be given as a dose. It must be remembered, however, that the warmth contained in a pint of hot coffee is not without benefit.

### D. Antidotes.

1. Permanganate of Potassium, ten grains in a pint of hot water in opium and morphine poisoning, repeated if necessary.
2. Dialysed Iron, sixteen ounces ; should be given *ad libitum* in cases of arsenic poisoning.

3. Acetic Acid, four ounces ; two teaspoonfuls or more in water in cases of poisoning by potash, soda, &c. To be frequently repeated. Vinegar is an efficient substitute.
4. Syrup of Chloral, four ounces ; of value in strychnine poisoning. Three drachms (thirty grains of chloral) may be given to begin with.
5. Sanitas, two ounces ; as an antidote in phosphorus poisoning. To be given freely every quarter of an hour.
6. Magnesia ; to be given freely in poisoning by acids.
7. Tannic Acid, two ounces ; in strychnine poisoning in teaspoonful doses.
8. Bromide of Potassium in two drachm powders ; in strychnine poisoning two powders to begin with, followed by one every ten minutes for an hour or more.
9. Nitrite of Amyl in a stoppered bottle or in capsules containing five minims in each. Inhale in chloroform poisoning, and in poisoning by aconite.
10. Chloroform, four ounces, for strychnine poisoning.

**E. Hypodermic Injections.**

1. Sulphate of Atropine solution (1 in 100), one drachm, for poisoning by aconite, morphine, pilocarpine, &c. The ordinary dose for hypodermic use is two minims, repeated in a quarter of an hour if necessary.
2. Acetate of Morphine solution (1 to 10), one drachm, useful to ward off shock. Ordinary dose for hypodermic use five minims.
3. Aconitine (English) solution (1 in 240) one drachm, for poisoning by digitalis. Two minims hypodermically; may be repeated in half an hour.
4. Pilocarpine Nitrite (1 in 20) one drachm; given in ten minim doses, frequently repeated, in poisoning by belladonna or atropine.
5. Nitrate of Strychnine solution (1 in 50) one drachm; in chloral poisoning given in two minim doses.
6. Tincture of Digitalis, one drachm; in aconite poisoning in twenty minim doses hypodermically.

For all these solutions tablets may be substituted with advantage. They take up less room and are less liable to deterioration.

It may be reasonably urged that this Antidote Case contains far more than is actually necessary, but much depends on whether the practice is in a town or in a scattered country district. In most places mustard, brandy, coffee and Cond's Fluid are readily procurable.

A small battery is often useful and tracheotomy instruments may be required. In cases of prolonged insensibility the bladder should be emptied by a catheter.

## THE STOMACH-PUMP

EVERY doctor should have a stomach-pump, or, what is better, a soft stomach-tube. It may not be wanted for years, but it may be wanted to-morrow, and a life, or many lives, may depend on its being at hand. A stomach-pump, with flute key action and everything complete, may be obtained for £2. The great point to remember is to fill the stomach with water before trying to empty it. The stomach should not only be emptied, but thoroughly washed out. Antidotes are best introduced in this way. In cases of poisoning with mineral acids or oxalic

or carbolic acid the stomach-tube is far safer than the stomach-pump.

In cases of emergency it is not a difficult matter to rig up an apparatus which will effectually empty and wash out the stomach without a stomach-pump. Take a piece of india-rubber tubing, six or eight feet long, and pass it down the œsophagus till it reaches the stomach, hold the free end well above the head, and by means of a funnel pour in water till the stomach is full. If the tube is pinched while full of water, and the lower end placed in a basin below the level of the stomach, it will act as a syphon and the stomach will be emptied. This may be repeated three or four times till the water comes back clear and free from smell. In the absence of a funnel a common india-rubber bottle may be used to fill the tube, or, for the matter of that, the mouth. An enema apparatus will do very well to inject the water, and if it has no valves, or if they do not work—not an uncommon occurrence—it will help to form part of the syphon.

## EMETICS.

THE following emetics are commonly employed :—

1. **Apomorphine.** One-tenth of a grain of the hydrochlorate—10 minims of the one per cent. solution—hypodermically. The *Injectio Apomorphinæ Hypodermica* may be used. Apomorphine is a powerful emetic and acts promptly, without the production of much nausea or depression. It keeps well and need not be freshly prepared. It is said that apomorphine is a dangerous drug, but this is not the case. If given by the mouth it simply acts as an expectorant. Although prepared from morphine it differs so completely in its action from that alkaloid that it may be given in cases of opium poisoning. The tablets are reliable, the tenth of a grain producing emesis in from three to four minutes.

2. **Common Salt.** Two table-spoonfuls in half a pint of tepid water. Not a very certain emetic, but has the advantage of being always at hand.

3. **Mustard.** A table-spoonful of the flour

in half a pint of water. This too is readily procured.

4. **Sulphate of Zinc.** Thirty grains in water, repeated if necessary; prompt and safe.

5. **Powdered Ipecacuanha.** Thirty grains in water; produces very little depression, and does not irritate the mucous membrane of the stomach.

6. **Ipecacuanha Wine.** Two table-spoonfuls in water; rarely prompt in its action and not reliable.

7. **Sulphate of Copper.** From five to ten grains dissolved in water.

8. **Tartar Emetic.** Three grains in water—slow in action and usually causes much nausea and depression.

9. **Antimony Wine.** An ounce or more in water.

10. **Carbonate of Ammonium.** Half a drachm or more in water.

11. **Powdered Alum.** A table-spoonful in water. Not reliable.

In cases of poisoning it is not so much a question as to which is the best emetic, but which can be obtained at once. Many people vomit very readily, almost at will, and with them a draught of tepid water, dirty or greasy

by preference, with the introduction of the fingers into the throat, will speedily effect the desired result.

In many cases it is desirable to give a combined emetic. Thus, we may begin with a table-spoonful of mustard in a tumbler of water, and follow it as quickly as possible with an emetic draught of half a drachm of sulphate of zinc and a drachm of powdered ipecacuanha to be taken in water. This may be followed by a hypodermic injection of gr.  $\frac{1}{10}$  of apomorphine, repeated if necessary.

The action of the emetic is facilitated by giving plenty of tepid water. In narcotic poisoning and in carbolic acid poisoning it is often a most difficult matter to get the patient to vomit.

## MULTIPLE ANTIDOTES.

MANY attempts have been made to formulate a multiple officinal antidote, to obtain, that is, a mixture which would neutralize the toxic action of most, or even all, of the active poisons. Such attempts are hardly likely to prove successful,



but the following is probably the best formula for such a preparation :—

Saturated solution of

Sulphate of Iron . . . .	100 parts
Water . . . . .	800 „
Calcined Magnesia . . . .	88 „
Purified Animal Charcoal . .	40 „

The iron solution should be kept separately and the magnesia and animal charcoal mixed together in the dry state in another bottle. When required for use the iron solution is mixed with eight times its bulk of water and thoroughly incorporated with the other ingredients and shaken well together. It may be administered *ad libitum*, a wine-glassful or more at a time. It is said to render inert preparations of arsenic, zinc, and digitalis, and to partly neutralize the action of mercury, morphine, and strychnine. It has no action on the alkalies, and none on phosphorus, antimony or hydrocyanic acid.

Iodide of starch has also been recommended as a multiple antidote. It is said that if given in large doses it is efficacious in poisoning by sulphuretted hydrogen, the alkalies, the alkaline sulphides, and especially the alkaloids with which iodine forms an insoluble compound.

## ACCESSORY TREATMENT

IN many cases of poisoning transfusion may be employed with advantage. It is not necessary to use blood, as a saline solution will do just as well. It is best to inject it into the circulation direct, but in the absence of a suitable apparatus it may be introduced by the stomach-pump into the stomach or rectum, from which it is easily absorbed. The following is the formula I use: Common salt, one drachm; bicarbonate of sodium, four grains; chloride of calcium, three grains; chloride of potassium, one grain; water, twenty ounces at a temperature of 100° F. On several occasions I have injected this into the peritoneal cavity with good results. The apparatus employed was the cannula of an aspirator attached to a piece of india-rubber tubing, the fluid being allowed to run in by syphon action.

Massage is undoubtedly of value in the treatment of cases both of acute and chronic poisoning. In acute chloral poisoning and poisoning by aconite it serves to maintain the temperature, whilst in chronic mercurial and lead poisoning it does much to restore the condition of the affected muscles. To be of any value it must

be performed by an experienced person. In many cases of poisoning the inhalation of oxygen is useful. It is readily obtained in cylinders under pressure, and a face-piece should be used. If the patient is still breathing naturally, the gas is taken into the lungs without difficulty, but in other cases artificial respiration will be required.

## FATAL DOSE.

It is no easy matter to say positively what is the fatal dose of any particular poison. Much depends upon the age of the patient, the condition of the stomach as regards food, the occurrence of copious and early vomiting, the administration of appropriate remedies, and so on. The question of tolerance is not to be lost sight of, especially in dealing with such drugs as opium, alcohol, arsenic, and corrosive sublimate. In many of the recorded cases the exact quantity taken is not known, whilst in others the strength of the preparation is not given. Amongst the most energetic toxic agents are Aconitine (gr.  $\frac{1}{10}$ ), Digitalin (gr.  $\frac{1}{4}$ ), Hydrocyanic acid (gr. i.), Strychnine (gr. i.-ii.), Nitro-Benzol, and above all some of the animal poisons.

## THE LEGAL ASPECTS OF CASES OF POISONING.

SHOULD the patient die, what are you to do? If you suspect foul play leave no stone unturned to bring the guilty parties to justice. Place yourself in the murdered man's position, and act for him. Do not leave the house till the case is in the hands of the police. Take charge of vomited matter, bottles and instruments, and lock them up.

In case of accidents or suicide it is not incumbent on you to act the part of a police officer.

If you are called in to a case of attempted suicide by poisoning, is it your duty to inform the police? My answer to this is emphatically "No. I am perfectly aware that in a well-known libel case an expert witness gave it as his opinion that "a medical man is obliged to inform the Public Prosecutor of any crime which has been committed or is intended to be committed." Attempted suicide is clearly an offence against the law, and it is possible that a medical man who saved the patient's

life might be charged with being an accessory after the fact if he failed to give information, but he would be very unwise to do so and it is not to be supposed for one moment that any jury would convict under those circumstances. If doctors were to divulge information which comes to them under the seal of professional confidence the public would soon cease to consult them.

Do not make a post-mortem examination until you receive an order from the Coroner to do so. If you are not accustomed to make post-mortem examinations, and the case is of importance and likely to attract public attention, call in a skilled pathologist to "assist" you or let the Coroner do so. You will give evidence first, and he can confirm your statements. Do not discount your evidence by telling people what you find; they will hear at the inquest.

If you are ordered to make an analysis of the contents of the stomach, or to examine the viscera for poison, you had better decline the responsibility unless you have a better knowledge of chemistry than falls to the lot of most medical men. Such work should be left to those who make it a special study. You are a medical man practising your profession, and

have no wish to usurp the functions of the pharmacologist or analytical chemist.

Before giving evidence think over very carefully what you are going to say. Better to rehearse it a dozen times in the privacy of your own chamber than to break down in public. Arrange your facts clearly and concisely, and divest your language as far as possible of technicalities. Give your evidence slowly, for it has to be taken down, not only by the Coroner, but by the reporters. Give it in your own way, and do not be interrupted by anyone. The Coroner may stop you and say, "Quite so, and then you applied the appropriate remedies." This is all very well if you forgot something, but if your treatment has been strictly correct let the Court have the benefit of it.

Think over carefully the questions you are likely to be asked, and be prepared to answer them. Read up the literature of the subject, and let your knowledge be up to date. If you do not know much about it, telegraph to some leading toxicologist and get him to coach you up in it, or at least to send you an abstract of the recent literature. It will pay you in the long run. Barristers constantly do this—why should not you?

Answer concisely, and to the point, and never volunteer a statement, unless it be to correct a false impression you may have created by a previous answer. Do not imagine that the object of cross-examination is to elicit the truth.

Do not be afraid of cross-examination. If you have read up your subject you should be more than a match for any Barrister. His knowledge is of necessity superficial, and he is hampered by the fear of displaying his ignorance. He, however, is probably coached, and possibly prompted by someone with the requisite technical knowledge. It is his business in life to grasp facts rapidly and to put them in a plausible and popular form. Do not underestimate those special gifts, the result of many years' training, for by the exercise of his skill he may in a few moments damage your reputation for accuracy both in the eyes of the public in general and of your patients in particular.

## PTOMAINES—CADAVERIC ALKALOIDS.

EVERY medical man should get up the subject of Ptomaines (from *πτῶμα*, a dead body) before giving evidence in a case of poisoning. They

are supposed to be alkaloids generated during decay and they closely resemble the vegetable alkaloids—veratrine, morphine, and codeine, for example—not only in chemical characters, but also in physiological properties. Most of them are of the muscarine type, although some of them are allied to atropine. They are commonly produced in substances which after exposure have been excluded from the air—in buried corpses, for example. Ptomaines are not of necessity of cadaveric origin. They are found in a number of putrefying substances such as sausages and tinned foods. Ptomaines or bodies closely allied to them have been extracted from decomposing urine and from human saliva, but these in all probability are not toxic. From the urine of patients suffering from various diseases poisonous principles have been obtained. In the bodies of persons exhumed after dying of acute arsenical poisoning peculiar arsenical poisonous bases are found known as "Arsines" (see *AQUA TOFANA*). A common defence in case of poisoning is that the reactions obtained were due to cadaveric alkaloids, and not to any poison administered. No reliable test has been discovered for distinguishing ptomaines from the alkaloids of vegetable origin.



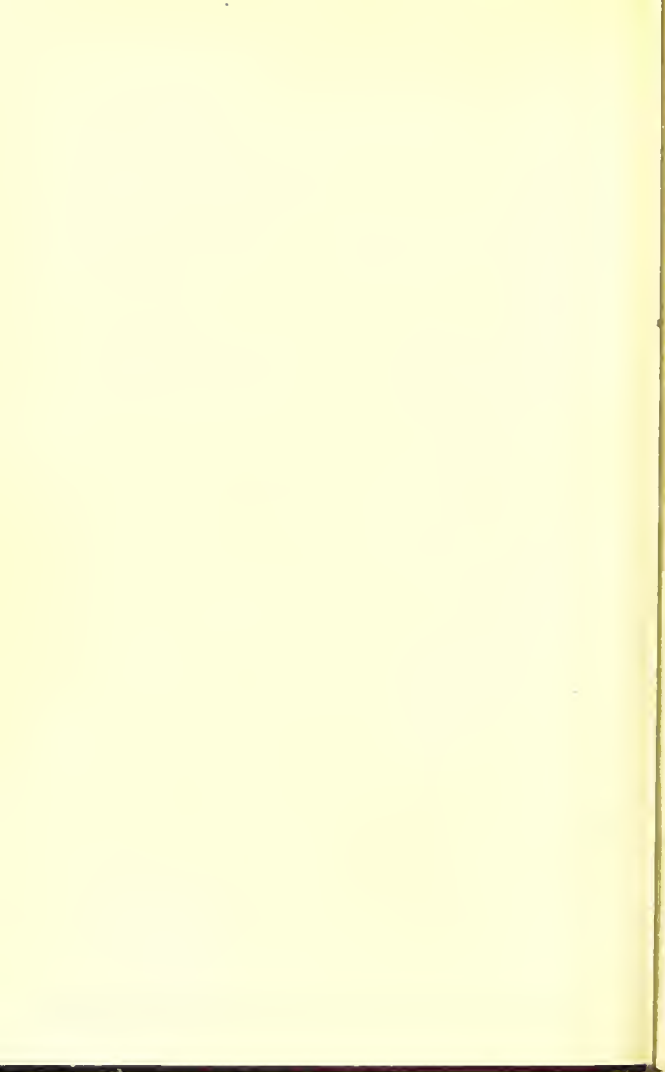
## THE FEE.

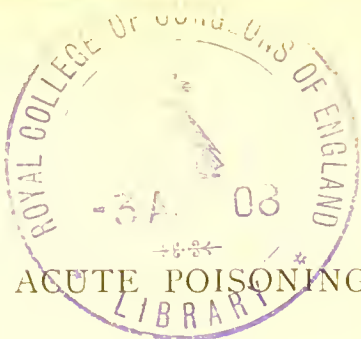
I AM often asked what should be the fee in a case of poisoning. It is not an easy matter to discuss, but still the subject cannot be passed by in silence. Clearly it is permissible to charge more for the treatment of a case of poisoning than for an ordinary visit. The doctor may be kept for some considerable time, and the duties he has to perform are not always of an agreeable nature. He is sent for at a moment's notice, and as it is a matter of life and death he has to go at once, possibly to his great inconvenience and to the inconvenience of his other patients. The responsibility is great, and the slightest error in judgment may result in a public enquiry and subject him to ridicule and opprobrium. Moreover, he has to furnish himself with special and expensive apparatus which is rarely needed, and is useless for other purposes. Taking these facts into consideration, I think his fee should be the fee he would charge the same people in an ordinary midwifery case. It will vary according to the circumstances and social position of the patient, from two to twenty guineas. A physician who has made the treatment of cases

of poisoning his particular study, would be justified in charging from fifty to a hundred guineas, including the subsequent attendance. If the patient's husband is a rich man, this is not too much for saving his wife's life—that is unless he would prefer being a widower.

A distinction in the matter of fee should be made between cases in which the poisoning is accidental and those in which the drug is taken wantonly and with the view of exciting sympathy regardless of the convenience of others. If a woman of *malice prepense* chooses to indulge in toxic doses of morphine or chloral, the fee should be punitive and should be rigidly enforced. She should not be let off for the price of a new hat, even if it be a creation,

ACUTE POISONING.





## ACUTE POISONING.

### ACETIC ACID.

*How taken.*—Not often used as a poison. Glacial acid, used for destroying warts, may be taken by mistake. Vinegar taken by women to prevent corpulence.

*Symptoms.*—Glacial acid would destroy mucous membrane of œsophagus and stomach, and perhaps give rise to perforation. Odour in breath, great pain in abdomen, probably convulsions, collapse, death.

*Treatment.*—1. **Soap and water.** Large draught of soap and water to be taken at once. Stomach-pump not to be used.

2. **Lime-water, chalk and water, or whitewash and water,** if at hand. **Magnesia** may be given freely.

3. **Milk, oil** and thick **gruel** may be used.

4. **Morphine.** A hypodermic injection of half a grain to ward off shock.

## ACONITE.

*How taken.*—A very active and deadly poison. The plant Monkshood, Wolfsbane or Blue Rocket (*Aconitum napellus*) found growing in every cottage garden—all parts poisonous. Root often mistaken for horse-radish, and the leaves have been eaten in salad. In one case aconite root dropped from a van passing through the streets. Tincture (B.P. 1 in 20) mistaken for a cordial. Liniment (B.P. 1 in 1½) with camphor. Fleming's tincture (same strength as the liniment but without the camphor) might easily be mistaken for sherry, and was on one occasion mistaken for flavoured spirit. The "Bish" poison of India is derived chiefly from *Aconitum ferox*. Symptoms of poisoning from inhaling the dust in powdering. Death from various applications for neuralgia. Aconite liniment taken instead of medicine. Overdose of strong tincture taken for a cold. May be used for purposes of suicide or for murder. Aconite pills sold freely, and largely used in treatment of neuralgia. There are many aconitines, and between them there is a wide range of activity. See ACONITINE.

*Symptoms.*—Warmth at pit of stomach, tingling of mouth, lips, and tongue, feeling of constriction of throat, deglutition frequent, tingling spreads all over body, numbness at tips of fingers and loss of sensibility, nausea and often vomiting, but may be absent. Loss of sensation, deafness, dimness of sight. Paralysis first of lower, then of upper extremities. Pulse reduced in strength and frequency, then irregular, and finally almost imperceptible. Respirations shallow, feeble, infrequent. May be convulsions, but as a rule no delirium and no coma. Pupils generally dilated, but may be contracted if no convulsions. Prostration great, but mind clear to the last, often with fear of approaching death. Cold, clammy perspirations towards the end, and often death quite suddenly, after some slight exertion, as attempting to sit up.

*Fatal dose.*—Death after taking a drachm of the tincture, also from merely tasting Fleming's tincture. Recovery after taking three drachms of Fleming's tincture.

*Treatment.* 1. **Stomach=tube** or **Emetic** of mustard (a table-spoonful of the powder in water), or of sulphate of zinc (a scruple in water), or of ipecacuanha wine (two table-

spoonfuls in water), or a hypodermic injection of apomorphine (10 minims of the one per cent. solution).

2. **Stimulants** freely, brandy, chloric ether, or sal volatile. If not retained by the stomach, to be well diluted and injected into the rectum, or subcutaneously.

3. **Atropine.** Give a hypodermic injection of gr.  $\frac{1}{50}$  of atropine (2 minims of the 1 in 100 solution), or thirty drops of tincture of belladonna by mouth or rectum. Be guided by pulse, and should it improve, repeat the dose in a quarter of an hour.

4. **Warmth.** Apply warmth to extremities by hot towels and hot-water bottles. Friction with the warm hand. Massage. Mustard poultice or mustard leaf over the heart.

5. Keep the patient strictly in the **recumbent position**.

6. **Digitalis.** If no improvement, give a hypodermic injection of gr.  $\frac{1}{100}$  of digitalin or twenty minims of tincture of digitalis, repeating it in twenty minutes if the pulse improves.

7. **Artificial respiration** for two hours if necessary.

*Tests.*—Aconitine may be extracted from organic mixtures such as the contents of the



stomach and the urine by Stas's process. It gives the usual alkaloidal reactions, but there are no distinctive tests. The pharmacological actions such as the peculiar numbing and tingling of the tongue and the effect on the frog's heart are sufficiently characteristic. The "taste test" is produced by a minim of the B.P. tincture, and by  $\frac{1}{20000}$ th of a grain of English aconitine.

### ACONITE AND BELLADONNA.

*How taken.*—This combination might be taken for suicidal purposes. More frequently a liniment is taken by mistake.

*Symptoms.*—Would depend much on the relative proportion of the two drugs. Must not be forgotten that belladonna to some extent antagonizes Aconite. Probable that symptoms would be the same as in aconite poisoning, but failure of heart's action would not be so marked, the pupils would be dilated and the skin would be dry, with perhaps a rash resembling scarlet fever. Delirium might be present.

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard, or of sulphate of zinc, or of

ippecacuanha, or a hypodermic injection of apomorphine (10 minims of the one per cent. solution).

2. **Stimulants** freely, brandy, spirits of chloroform, or sal volatile. If not retained, dilute and inject into rectum.

3. **Warmth** to extremities by hot towels, or hot-water bottles. Friction with the warm hand. Massage. Mustard leaf or mustard poultice over the heart.

4. Keep the patient in the **recumbent position**.

5. **Artificial respiration** for two hours if necessary.

## ACONITE AND MORPHINE.

*How taken*.—Not a common combination. Might be taken for suicidal purposes, or in a liniment by mistake.

*Symptoms*.—Would probably be those of aconite poisoning, with coma and contracted pupils.

*Treatment*.—1. **Stomach=tube** or **Emetic** of mustard, sulphate of zinc, ippecacuanha, or a hypodermic injection of apomorphine.

2. **Rousing**. Flap patient with a wet towel especially about the chest, and over the region

of the heart. Give **sal volatile** and **chloric ether** freely. Keep him in the recumbent position, and do not attempt to walk him about.

3. **Warmth to the extremities** by hot towels, or hot-water bottles. Friction with the warm hand.

4. **Atropine.** A hypodermic injection of  $\frac{1}{16}$  gr. of sulphate of atropine (2 minims of the 1 in 100 solution), or thirty minims of tincture of belladonna by mouth or rectum. If no improvement, repeat the dose in a quarter of an hour.

5. **Coffee.** An enema of a pint of hot strong coffee.

6. **Battery.** Interrupted current to extremities. **Artificial respiration** to be maintained for two hours if necessary.

### ACONITINE—ACONITIA.

Usually described as an alkaloid obtained from *Aconitum napellus* or Monkshood, but much of our English aconitia is in all probability extracted from *A. ferox*, the Indian aconite.

Commercial aconitine is not a simple substance,

but a mixture of several alkaloids, including aconitine, pseudoaconitine, and picraconitine. It is generally stated that English aconitine is at least seventeen times as active as the German, the French being intermediate in power; but this classification in English, French, and German is unreliable and unscientific. It is said that Merck's aconitine is thirty times as active as Friedlander's, whilst Petit's is eight times as active as Merck's. This is a matter of some importance, for the substitution of one kind for another might give rise to serious results.

I have seen cases of poisoning from the too energetic use of aconitine ointment rubbed into the brow as a remedy for neuralgia.

Lethal dose of crystalline aconitine about  $\frac{1}{15}$  grain.

For symptoms and treatment see *Aconite*.

## ALCOHOL.

The most important alcohols are :—

$\text{CH}_4\text{O}$ —Methylic alcohol, wood spirit.

$\text{C}_2\text{H}_6\text{O}$ —Ethylic alcohol, spirits of wine.

$\text{C}_3\text{H}_8\text{O}$ —Propylic alcohol.

$\text{C}_5\text{H}_{12}\text{O}$ —Amylic alcohol, fusel oil or potato spirit.

Employed in a popular sense, alcohol means ethylic alcohol.

*How taken.*—Usually for a wager or from bravado. Vapour of alcohol may cause death. Most severe cases are those in which a person bores a hole in a cask of spirits and drinks the contents undiluted. Such cases may occur in an endemie form. Absolute alcohol is ethylic alcohol with not more than one per cent. of water. Rectified spirit contains 90 per cent. of water. "Proof spirit" is a mixture of spirit and water, containing 49·24 per cent. of alcohol, *i.e.* half and half; every half per cent. of alcohol above this corresponds to one degree over-proof. Methylated spirit is spirit mixed with ten per cent. of methylic alcohol or wood spirit. The B.P. in addition to absolute alcohol renders official 90, 70, 60, 45, and 20 per cent. alcohol.

Percentage of alcohol in some common alcoholic drinks: Brandy 53, Rum 53, Whiskey 53-54, Gin 51, Port 20-25, Sherry 15-19, Burgundy 13-14, Claret 10-17, Hock 8-10, Strong Ale 6, Stout 6, Porter 4, Small Beer 1.

*Symptoms.*—Usually appear at once, at all events within an hour. Confusion of thought, giddiness, inability to stand or walk, tottering gait, vacant expression, face flushed, but may be

pale, conjunctivæ congested, lips livid, breath alcoholic, skin covered with sweat, pupils dilated and fixed, but may be contracted, convulsions, stupor, coma, and death. Remission of symptoms not uncommon, with death quite suddenly some hours, or even days, after apparent recovery.

*Diagnosis.*—Often difficult. Most likely to be confounded with apoplexy, mechanical injury or concussion from blow or fall on the head, opium or chloral poisoning, diabetic or uræmic coma and post-epileptic coma. History of case and examination of head for marks of violence may help you. Odour of breath and of contents of stomach also a guide. In poisoning by alcohol face usually flushed, and pupils dilated; in opium poisoning face usually pale, and pupils contracted, but to this many exceptions. In alcoholic coma face may be either flushed or pale, and pupils may be at first contracted and later dilated. In uræmia pupils usually contracted, and there may be recurrent convulsions. Alcohol is eliminated by kidneys and lungs, and after an alcoholic debauch the urine will be of low specific gravity. Excitement would be in favour of alcohol; remissions rare in opium poisoning. Not at all uncommon to find concussion or even

fracture of the skull in conjunction with poisoning by alcohol. Laudanum frequently taken in porter or stout. If in doubt act on supposition that you are dealing with a case of serious injury. Hesitate before sending away a man who is intoxicated; "drunk or dying" is a difficult problem.

*Fatal dose.*—Adult; death from half a pint of gin, also from two bottles of port. Recovery from quart of gin, also from quart of whiskey; from two bottles of port; from pint and a half of mixed gin and brandy. Child; death from half a pint of gin, from quartern of rum, and from two ounces of gin. Recovery from three ounces of rum.

*Treatment.*—1. **Stomach-tube** or **Emetic** of apomorphine (10 minims of the one per cent. solution hypodermically), or of mustard (a table-spoonful of the powder in water), or of sulphate of zinc (thirty grains in water), or of ipecacuanha (thirty grains of the powdered root or an ounce of the wine in water).

2. If patient insensible **rouse him** in every way, make him walk about, flap him with wet end of towel, shout at him, pinch him, and apply **battery** (interrupted current) to legs. Massage. **Coffee.** Give hot strong coffee (a pint) by mouth or enema.

3. The **cold douche**, a jug of water being steadily poured over the head from a height from time to time. The alternate hot and cold douche is useful. Do not use cold water if patient is in a condition of collapse.

4. **Nitrite of Amyl.** Inhalations of ammonia or nitrite of amyl. If indications of heart failure, hypodermic injection of  $\frac{1}{20}$  gr. of strychnine.

In ordinary cases of drunkenness, such as are found in the casualty room of the Hospital every Saturday night, a hypodermic injection of apomorphine with the usual remedies and the cold douche. The bladder should be emptied with catheter. In all cases of doubt admit patient with a provisional diagnosis of cerebral hæmorrhage.

See also ALCOHOL (Chronic Poisoning).

#### ALMONDS, ESSENTIAL OIL OF—OIL OF BITTER ALMONDS.

Volatile oil obtained by distillation of bitter almonds with water, contains from five to fifteen per cent. of hydrocyanic acid. The diluted hydrocyanic acid of the B.P. contains two per cent. of hydrogen cyanide.



Death from seventeen drops ; recovery after four drachms. Death from thirty drops in half an hour. Has been mistaken for oil of sweet almonds obtained by expression from sweet almonds.

Almond flavour, spirits of almonds or essence of peach kernels, consists of one part of essential oil of almonds and seven of spirit. About the same strength as prussic acid and largely used by cooks for flavouring pastry, blanc mange, &c. Found in every kitchen.

Death from thirty drops ; poisoning in a child from eating tapioca pudding flavoured with it.

For symptoms and treatment, see HYDRO-CYANIC ACID.

### AMMONIA—LIQUOR AMMONIÆ— SPIRITS OF HARTSHORN.

*How taken.*—Mistaken for sal volatile. In liniments, *e.g.*, Linimentum Camphoræ Compositum and Linimentum Ammoniaë. Indiscriminate use in cases of fainting especially when too strong a solution applied to the nose. Fumes inhaled from careless use of a chloride of ammonium apparatus. The strong solution of ammonia—liquor ammoniaë fortior—is three times as strong as the solution of ammonia—liquor ammoniaë.

*Symptoms.*—Usually at once, burning pain in mouth, throat, chest and stomach, patient in great agony, lips and tongue swollen, red and glazed and covered with pieces of detached epithelium. Suffocative cough, violent dyspnœa, vomiting with copious discharge of salivary fluid mixed with blood. Face pale and anxious, eyes small, haggard and injected. Pulse slow, limbs cold. Irritation of larynx, lungs and air passages; voice reduced to a whisper or even lost. Death at once, or not till some days after, from bronchitis or pneumonia.

When acute symptoms have passed off there may be indications of constriction of œsophagus or of gastric ulcer. In a case recently under my care a lady went into a chemist's shop and asked for a dose of sal volatile in water. She is said to have been supplied with two drachms of aromatic spirit of ammonia in an ounce and a quarter of water. This statement may or may not be correct; at all events after the acute symptoms had passed away there was complete loss both of taste and smell, a condition which promises to be permanent. It is probable that it was the liquor ammoniæ which was supplied in place of the sal volatile.

Merely inhaling vapour may cause violent dyspnœa, cough and irritation of the larynx.

*Diagnosis.*—Not difficult. Sudden onset of the symptoms, smell of ammonia in breath, white fumes with rod dipped in hydrochloric acid.

*Fatal dose.*—Two drachms of the strong solution may prove fatal, half an ounce usually fatal, but recovery recorded after an ounce had been taken.

*Treatment.*—1. **Vinegar** freely diluted with water. **Lemon or orange juice**, given freely. **Acetic acid** or any other acid if diluted with large quantities of water. Toilet vinegar may be used. If power of swallowing lost, inhalation of acetic acid or vinegar from pocket handkerchief.

2. **Demulcent drinks** such as white of egg and water, milk, barley water, arrowroot, &c., olive oil.

3. If much dyspnœa from œdema of the glottis it may be necessary to perform **tracheotomy**. Inhalation of ehloroform may relieve spasm. Steam from bronchitis kettle or spray apparatus may be useful.

4. To ward off shock and relieve pain hypodermic injection of morphine (5 minims of the 1 in 20 solution).

## ANILINE

Is ammonia with one atom of hydrogen replaced by one of the compound organic radical phenyl. Is obtained from coal-tar or from nitrobenzol. When pure is a colourless liquid, but as usually met with has a reddish tinge. It has an aromatic burning taste and a faint vinous odour. Largely used in preparation of dyes and colouring agents, such as methylene blue, eosine, fuchsine, rosaniline and coralline. It will be remembered that it is from the base aniline that acetanilide or "antifebrin," and methylacetanilide or "exalgin" are derived. Many of the bad effects attributed to use of red aniline dyes probably due to arsenic as an impurity. Are now prepared with much greater care.

*How taken.*—Vapour inhaled in cleaning out a vat. Fumes inhaled from a broken carboy. Used for dyeing articles of clothing, such as socks, lining of gloves, &c., and may produce an intense form of inflammation and vesication of the skin which is rebellious to treatment and liable to relapse for many months after the original attack has subsided. Toxic effect of some red aniline dyes probably due to presence

of arsenic as an impurity. Employed to colour confectionery and cosmetics. Cyanosis in newly born children caused by use of napkins marked with aniline ink. Sucking aniline pencil.

*Symptoms.*—Similar to those produced by nitro-benzol. Nausea and vomiting, giddiness, apparent intoxication, drowsiness, profuse sweating, the surface of the body remaining cold, face, lips, mucous membrane of the mouth, and fingers of a deep blue colour. Breathing, gasping, smell of aniline in the breath. Sufferer looks like a patient in last stage of Asiatic cholera. Workers in aniline often suffer from bronchitis and a violent dry spasmodic cough. Piece of aniline pencil in eye coloured conjunctiva bright violet, and gave rise to much inflammation with intense pain and photophobia.

*Fatal dose.*—Six fluid drachms.

*Treatment.*—Removal of cause, fresh air, stimulants, artificial respiration, inhalation of oxygen, bleeding or transfusion.

*Tests.*—Aniline may be separated from organic mixtures by rendering acid with caustic potash and then distilling. By the addition of sulphuric acid it is converted into the sulphate, and on adding a solution of bleaching powder a purple colour is produced changing to a reddish brown.

## ANTIFEBRIN--ACETANILIDE.

Crystalline substance almost insoluble in water, soluble in alcohol. Used as an antipyretic. Caution should be exercised in prescribing this drug, as it sometimes induces unexpected effects. The symptoms recorded are : A feeling of fatigue, faintness and anxiety. Nausea, vomiting, and purging. Pulse weak and thready, respiration at first hurried, then impaired and laboured. Lividity, cyanosis and sweating. Tremors, convulsive movements and collapse. Urine may contain indican. The following cases serve to illustrate the toxic effects produced by the drug :—

A healthy young woman took a teaspoonful in water and repeated it in ten minutes. Becoming alarmed took an emetic and vomited. In a few minutes giddiness, singing in the ears, throbbing in the temples and dull pain in the head. Four hours later face livid, lips blue, pupils contracted, mental condition unaffected. Followed by symptoms of collapse, pulse too feeble to be counted, breathing shallow and every appearance of speedy dissolution. For three and a half hours condition critical, and not out of danger for fourteen hours.

After ten grains profuse perspiration, weak pulse, dilated pupils, shallow respiration and collapse. Improvement in one hour under treatment. Girl of 13, two doses, 4 grains each, blue in face, faintness, palpitation, prostration.

Symptoms are those of aniline poisoning.

*Dose*.—Recovery from 340 grains:

*Treatment*.—Emetic. Recumbent position. Stimulants. Inhalation of ether and oxygen. Hypodermic injection of brandy. Warmth to extremities.

### ANTIMONY—TARTARATED ANTIMONY, TARTAR EMETIC.

Antimonial wine contains two grains of tartar emetic to the ounce.

*How taken*.—Mistaken for Epsom salts, also for carbonate of sodium. Overdose when given for medicinal purposes, murder, secret poisoning. External application in form of ointment may cause death. Antimony used in veterinary practice to improve condition of horses. The sulphide is one of the ingredients in Bengal signal lights.

*Symptoms.*—Metallic taste in mouth, nausea, incessant vomiting, burning heat, and constriction or choking in the throat, difficulty in swallowing, soreness of mouth and throat with peeling off of mucous membrane, pain in stomach, violent purging. May be thirst with increased flow of saliva. Cramps in arms and legs, coldness of surface with clammy perspiration, congestion of head and face, great depression, faintness, pulse very weak, respirations short and painful, collapse, death. Sometimes either purging or vomiting absent. Sometimes tetanic spasm and sometimes pustular rash or skin like small-pox.

*Diagnosis.*—May be mistaken for ulcer or cancer of stomach or cholera, or may be confounded with arsenic poisoning. Never suppression of urine as in poisoning by arsenic. With antimony, when only one large dose is taken, case proceeds rapidly either to death or recovery. Antimony is sometimes contaminated with arsenic, and this may make diagnosis more difficult. Testing urine and vomited matter for antimony would distinguish it from natural disease.

*Fatal dose.*—Much depends on early occurrence of vomiting. In an adult from ten to



twenty grains of tartar emetic would probably prove fatal—a smaller quantity if given in divided doses—but recovery is recorded after half an ounce has been taken. Three-quarters of a grain proved fatal to a child. Prognosis on the whole good, if treatment prompt.

*Treatment.*—1. In those rare cases where there is not vomiting, give an **Emetic** of apomorphine (10 minims of the one per cent. solution hypodermically), mustard (a table-spoonful of the powder in water), sulphate of zinc (a scruple in water), or ipecacuanha wine (an ounce in water). Copious draughts of tepid water to promote vomiting always useful.

2. **Tannic or gallic acid.** Give half a drachm of tannic or gallic acid in water, repeating it as often as rejected. Decoction of oak bark will do as well.

3. **Tea or coffee.** Give large doses of strong tea or coffee.

4. Give white of egg, barley-water, arrowroot water, or milk.

5. **Stimulants.** Give stimulants if much collapse.

6. Wrap the patient in warm blankets, and put hot-water bottles to the feet.

7. **Morphine.** Give a hypodermic injection

of gr.  $\frac{1}{2}$  of morphine when the acute symptoms have subsided.

*Tests.*—Tests for antimony numerous and characteristic. Orange precipitate of sulphide with sulphuretted hydrogen in acid solutions. Same precipitate with ammonium sulphide in alkaline solutions. Place a small quantity of solution in a platinum dish, insert a piece of zinc, when a black stain (which must be further identified) will be formed at point of contact. Other special tests are Marsh's, Reinsch's, and Hoffmann's.

### ANTIPYRIN OR PHENAZONE.

Phenazone is the pharmacopœial name of this substance, but the popular term antipyrin is still in common use.

*How taken.*—Very popular with the public and usually taken by them without any particular reference to the dose or frequency of administration. Should be used with great caution. Official dose 5 to 20 grains, but severe symptoms after 10 and even 7 grains.

*Symptoms.*—After small doses epigastric pain, nausea and vomiting, followed by weakness of the pulse, hurried respiration and cyanosis. In

some cases persistent sneezing with conjunctivis, swelling of eyelids, lachrymation and flow of mucus from the nose. After larger doses headache, vertigo, yawning and drowsiness, loss of memory, confusion of ideas and deafness. The cheeks and lips may be almost black from the cyanosis. In several cases prompt collapse has followed the administration of large doses of the drug. Even small doses may induce itching of the inner side of the thighs followed by a crop of urticaria which gradually extends over the abdomen.

*Treatment.*—Keep the patient in the recumbent position and give stimulants. The inhalation of pure oxygen gas may prove useful.

AQUA FORTIS. See NITRIC ACID.

### AQUA TOFANA.

A deadly poison made and sold by the iniquitous Tofana or Tophiana, who is supposed to have poisoned with it more than six hundred people, including two popes, Pius III. and Clement IV. The *Acquetta di Napoli* was probably a solution of arsenious acid of uncertain

strength. The *Acquetta di Perugia* was prepared by rubbing white arsenic into the flesh of a pig, and collecting the liquid which drained from it. The *Aqua Tofana* was made in the same way, with the addition of the juice of the ivy-leaved broad flax (*Linaria cymbalaria*). From four to six drops were sufficient to destroy life, but it was asserted that the dose could be so proportioned as only to operate fatally within a certain time. The "aqua tofana" continued to be manufactured at Naples, and distributed through Italy for many years after the death of its originator. It was used by Hicronyma Spara, an old fortune-teller, who was the president of a society of young married women whose diversion it was to poison their own and other women's husbands. Marie de Brinviller's poison was arsenic dissolved in *aqua cymbalaria*, which in itself is certainly not poisonous. Arsenic was undoubtedly the active principle of the *poudre de succession* or "inheritance powder" in which the two female prisoners, La Vigoreux and La Voison, carried on so large a traffic. Compare PTOMAINES (p. 43).

The modern method of poisoning by arsenic is well illustrated by the following account :—  
"Experiments were then made by one of the

prisoners, which resulted in the preparation of the arsenic in the following manner:—A number of fly papers were purchased, the price being, it is said, one shilling for sixteen, and these were placed on a soup plate, one by one, layer by layer, and as they were so placed a small quantity of boiling water, just sufficient to thoroughly saturate the papers, was poured upon them. The papers were allowed to stand for a few hours, and were then taken out singly, each one being well squeezed so as to extract all the moisture therefrom. The liquid remaining, which was almost colourless, but which probably contained from eight to twelve or even sixteen grains of arsenic, was poured into a bottle, and the mixture was then ready for its diabolical use."

#### ARSENIC—ARSENIOUS ACID—WHITE ARSENIC.

*How taken.*—A common and popular poison; exerts its toxic action by whatever channel introduced. Frequently used for criminal purposes. By law not allowed to be sold in small quantities, unless coloured with soot or indigo, but frequently evaded. Very little, if any, taste,

so may be administered in any article of food without difficulty. Fowler's solution—liquor arsenicalis (1 in 100)—is flavoured with compound tincture of lavender. Cases of poisoning from grinding arsenic in the mills, also from vapour in copper smelting. Largely used in veterinary medicine, the common tonic ball containing five or ten grains of arsenic acid. Also used as a sheep-wash. A constituent of some vermin killers and rat pastes. Many preparations for destroying weeds are composed almost entirely of arsenic. Used in some "fly killers," such as the *papier moure*, and may be washed out of them easily. Used as a "cleansing liquid" to take fur off boilers and coppers. Used for stuffing birds and animals, the dust from which has proved poisonous. Wheat often steeped in arsenical solution. Largely used in pyrotechny and the manufacture of coloured fires. Has been mixed with flour by mistake, and has been used to adulterate violet powder. Used to "destroy the nerve" in stopping teeth. Arsenic is eliminated chiefly by the bowels and urine, but may be detected in the sweat, saliva and bronchial secretions.

*Symptoms.*—Usually appear in from a quarter of an hour to an hour. Faintness, depression,

burning pain in stomach, nausea, vomiting of brown matter mixed with mucus and streaked with blood. Vomited matter may be green from bile, black from admixture of soot, or blue from indigo. Purging with straining, the matter often mixed with blood. Severe cramps in calves of legs. Sense of constriction with dryness or heat in throat and often intense thirst. Pulse small, frequent, irregular, may be imperceptible. Breathing painful from tenderness of abdomen. Skin cold and clammy. Collapse and death. May be a little tetanus or may be salivation or retention of urine and a rash—eczema arsenicale—may appear on skin. Symptoms usually continuous, but may be remissions or even intermissions and then death.

*Fatal dose.*—From two to three grains usually fatal, but recovery probable after one grain. In exceptional cases, recovery after very large doses, especially if taken on a full stomach and rejected by early and copious vomiting.

*Treatment.*—1. **Stomach=tube** or **Emetic** of apomorphine (hypodermic injection of 10 minims of the one per cent. solution), or mustard (a table-spoonful of the powder in water), or sulphate of zinc (a scruple in water). To be

followed by large draughts of hot greasy water or salt and water to wash out stomach. Most important that the whole of the poison should be removed.

2. **Iron.** Give freshly prepared sesqui-oxide of iron, made by precipitating an ounce of tincture of perchloride of iron in a tumblerful of water with two tablespoonfuls of washing soda, and filtering through a handkerchief. It should be given in hot water, and in unlimited quantities.

3. Give **magnesia** freely if above not at hand.

4. Give **castor oil**, or olive oil, or equal parts of oil and lime-water, frequently and in large doses.

5. **Stimulants** freely, if much prostration.

6. **Mucilaginous drinks.** Such as white of egg, barley-water, linseed-tea.

7. **Warmth.** Hot blankets, hot bottles to extremities, friction with warm hand.

8. **Morphine.** When the acute symptoms have subsided, poultices to abdomen, and a hypodermic injection of half a grain of morphine.

*Tests.*—Arsenic may be extracted from organic mixtures by addition of pure hydrochloric acid and distilling when the volatile



chloride comes over in the distillate. Arsenious acid easily reduced in glass tube with piece of chareoal (end of a charred match), yielding a metallie substance which must be further tested. In solutions acidulated with hydrochloric acid, arsenious acid gives a pale yellow preeipitate with sulphuretted hydrogen. Other special tests are Marsh's, Hoffmann's, and Reinsch's. The last named requires skilful manipulation.

See also ARSENIC (Chronic Poisoning).

ARUM. See LORDS AND LADIES.

### ATROPINE.

The active principle of belladonna. Also found in *Datura Stramonium*.

*How taken.*—Eye-drops taken by mistake. Overdose given hypodermically for relief of sciatica. Murder. Death from use of atropine ointment to a blistered surface. Strength of liquor atropinæ sulphatis 1 in 100. Unguentum atropinæ, 2 per cent.

*Symptoms.*—See BELLADONNA.

*Fatal dose.*—Death from two grains, recovery from one grain, also from a grain and a half. Recovery of a child aged two from a grain and of another aged four from half a grain. Prognosis in children good.

*Treatment.*—1. **Stomach=tube** or **Emetic** of apomorphine (10 minims of the one per cent. solution hypodermically), or mustard, sulphate of zinc or ipecacuanha. The stomach may be washed out freely with tea or tannic acid.

2. **Stimulants** such as brandy, sal volatile, or chloric ether.

3. **Coffee.** An enema of a pint of hot strong coffee.

4. Mustard to the calves of the legs, hot-water bottles to the feet, rousing by flicking with a wet towel, alternate hot and cold douche, interrupted current to limbs, &c. Massage.

5. **Pilocarpine.** Hypodermic injection of half a grain of nitrate of pilocarpine to be repeated frequently, or two drachms of tincture of jaborandi by mouth or rectum.

6. **Artificial respiration** to be maintained for at least two hours if necessary. Use catheter if retention.

## BAKING-POWDERS.

Baking-powders as a rule consist of cream of tartar and bicarbonate of sodium in equivalent proportions with a little dehydrated starch to keep the materials dry and prevent chemical action before they are used. In a case referred to me for report a whole family was seized with symptoms of poisoning after eating a cake made with baking-powder. At the inquest one end of the packet was found to consist entirely of oxalic acid, but it was not ascertained how it came there. Possibly the packet was accidentally broken by some shop assistant and the contents filled up by the first white powder which came to hand.

## BARIUM OR BARYTA.

*How taken.*—Chloride mistaken for Epsom salts, nitrate mistaken for sulphur. Chloride, nitrate, carbonate and acetate all poisonous. Heart remedy allied in action to digitalis.

*Symptoms.*—Pain in stomach and bowels, purging, vomiting, face anxious, pulse feeble, breathing short and laboured. May be giddiness, cramp, paralysis, convulsion. Collapse, death.

*Fatal dose.*—Death from teaspoonful of chloride and from drachm of carbonate, but much smaller quantity would probably prove fatal.

*Treatment.*—1. **Stomach=tube** or **Emetic** of sulphate of zinc, mustard, or ipecacuanha. Apomorphine might be used as an emetic.

2. **Sulphate of sodium** (Glauber's salt), in ounce doses in water or milk; **sulphate of magnesium** (Epsom salts) in ounce doses; or **alum** in drachm doses. Dilute **sulphuric acid** in half-drachm doses may be added to these draughts or may be given alone, freely diluted with water. Sulphate of sodium is probably a true physiological antidote.

5. Wrap patient in warm blankets; hot-water bottles or bricks to feet. Stimulants freely if collapse. Hypodermic injection of morphine if much pain after subsidence of acute symptoms.

### BATTLE'S VERMIN KILLER.

This is said to contain 23 per cent. of strychnine mixed with flour and Prussian blue. A threepenny packet contains about  $1\frac{1}{2}$  grains of

strychnine and a sixpenny packet about  $2\frac{1}{2}$  grains. A fertile source of poisoning. For treatment, see STRYCHNINE.

### BEE-STINGS.

Bee-stings rarely give rise to much trouble. but the sting of a wasp may prove rapidly fatal, even in the case of a healthy adult. In one instance a lady aged 23 was stung by a wasp on the neck just below the angle of the jaw. The sting was at once extracted and some ammonia was applied to the wound. In a few minutes she became faint and was assisted to the bed. She complained of choking and of pains over the chest and abdomen. She swallowed some brandy with difficulty. She passed a loose motion and within fifteen minutes was dead. It is not improbable that the poison was introduced direct into a vein.

*Treatment.*—1. Make the patient lie down and give stimulants freely. Brandy, whiskey and champagne are useful. If swallowing impossible, inject with an enema apparatus into the rectum.

2. Extract the sting and apply ammonia, sal volatile, carbonate of sodium, carbonate of

potassium, washing soda, or any other alkaline solution.

3 Should this fail, try carbolic acid lotion, a drachm to eight ounces, or carbolised oil (1 in 20). Lint soaked in chloroform or in oil of pennyroyal are popular remedies.

4. If sting in mouth or upper part of throat glycerine or glycerine of borax to relieve œdema. Intubation of larynx or tracheotomy may be found necessary.

### BELLADONNA—DEADLY NIGHTSHADE— DWALE—ATROPA BELLADONNA.

Grows in many parts of Britain on calcareous soil, but is scarce. Found in shady lanes and under hedges, in neighbourhood of villages and ancient ruins. Berries size of a small cherry, deep central furrow, and when ripe of a shiny black colour.

*How taken.*—Berries eaten by children; in one case were baked in a pie. Infusion of leaves taken by mistake. Extract substituted for extract of hyoseyamus in pills, also mistaken for extract of taraxacum and for confection of senna. Liniment taken by mistake. Poisonous symp-

toms from application of plaster to loins for lumbago.

*Symptoms.*—Heat and dryness of mouth and throat with supression of saliva, difficulty in swallowing and great thirst. Face flushed, eyes prominent and sparkling, indistinct or double vision, pupils widely dilated and insensible to light. Great excitement, noisy delirium, patient often thinking that he has to start on a journey. Muscular power weakened, gait unsteady and staggering. Frequent desire to pass water with inability to do so. Skin dry, with rash like scarlet fever. Deep sleep, recovery.

*Diagnosis.*—May be confounded with poisoning by stramonium or hyoscyamus, but of no consequence, as treatment the same. Has been mistaken for delirium tremens or acute mania.

*Fatal dose.*—Death from drachm of liniment; recovery from half an ounce. Recovery after three drachms of extract. Recovery after eating fifty berries. Prognosis good; majority of cases recover. Children will take almost as much as adults.

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard (a table-spoonful of the powder in water), or of sulphate of zinc (a scruple in water), or of ipceacuanha wine (two table-spoonfuls

in water). Apomorphine may be used as an emetic.

2. **Pilocarpine.** Hypodermic injection of half a grain of nitrate of pilocarpine to be repeated if necessary, or two drachms of tincture of jaborandi by mouth or rectum. Pilocarpine is a much less powerful alkaloid than atropine, and an overdose is not likely to do any harm. Beneficial effects shown by commencing contraction of pupils, sweating and abatement of delirium.

3. **Stimulants** such as brandy, sal volatile or chloric ether. An enema of a pint of hot strong coffee.

4. Mustard to the calves of the legs, hot-water bottles to the feet, rousing by flicking with a wet towel, alternate hot and cold douche, interrupted current to limbs.

5. **Artificial respiration**, to be maintained for two hours if necessary. Catheter to be used if retention.

6. In a bad case or in the absence of pilocarpine, a hypodermic injection of morphine, or of physostigmine. Atropine antagonizes physostigmine, but the exact value of physostigmine in poisoning by atropine has yet to be determined.



*Tests.*—Pharmacological tests of more importance than the chemical. Solution of red iodide of mercury in excess of iodide of potassium will preeipitate atropine from even dilute solutions. Action of solution of alkalioid on pupil and on frog's heart reliable. May be confounded with some of the other tropines, but group test generally sufficient.

### BENZIN—BENZOL.

Colourless volatile liquid hydrocarbon, complex in composition, made by distillation and rectification of coal naphtha. Insoluble in water. Odour and inflammability suffieient to identify it. Must not be confounded with benzoline, which is petroleum spirit or petrol (see PARAFFIN OIL).

*How taken.*—Never intentionally. Vapour inhaled by accident in gas-tar distillery. Taken in mistake for *vodka*. Used for burning in lamps and for dyeing and cleaning purposes. Useful as a cough medicine mixed with olive oil and oil of peppermint.

*Symptoms.*—Active poison. Vapour acts as a narcotic, and also produces certain nervous symptoms. Noises in the head, convulsive

trembling, twitchings of muscles, convulsions, difficulty in breathing. Taken internally may give rise to dilated pupils, trismus, irregular stertorous breathing, coldness of the extremities, paraplegia, distension of the abdomen and death. Patient may run about in wild delirium and then sink into a condition of collapse with stertorous breathing, muscular relaxation and cold, clammy skin.

People engaged in dyeing and cleaning suffer severely from headache, vertigo, dizziness and intoxication. In case of workmen employed in distilling benzine, pulse accelerated but regular, skin hot, eyes bright, face animated, gums marked with blackish line. Breath emits odour of the drug. If action prolonged, intoxication which may go on to delirium; patient talks incessantly, speech embarrassed and halting. Marked loss of sexual power. Epileptiform attacks followed by aphonia and mental disturbance. Coma, paralysis and disturbance of sensibility.

*Fatal dose.*—Death in seventeen hours from taking three drachms.

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard, sulphate of zinc or ipecacuanha. If vapour inhaled, stomach-pump or emetic useless.

2. **Artificial respiration** to be steadily maintained. Patient to be exposed to current of fresh air—very important. Inhalation of oxygen.

3. **Douche.** Alterate hot and cold douche, the water being poured over the chest, from a height.

4. **Stimulants.** Brandy, sal volatile, or chloric ether frequently repeated. If patient cannot swallow, to be given as enema, or brandy may be injected under the skin. Inhalations of ammonia on a pocket handkerchief.

5. **Atropine.** Hypodermic injection of gr.  $\frac{1}{60}$  of atropine, or 30 drops of tincture of belladonna by mouth or rectum.

6. **Battery.** Interrupted current to chest-walls, and over region of the heart.

## BICHLORIDE OF METHYLENE OR METHYLENE.

Used as an anæsthetic. Is not a simple substance, but a mixture of ehloroform and 20 per cent. methylic alcohol. Physiological effects similar to those of a mixture of ehloroform and alcohol. Safer to use A.C.E. mixture (alcohol 1,

chloroform 2, ether 3 parts), or to put patient under chloroform and then give ether. Several deaths from methylene, the symptoms being identical with those of chloroform. *Treatment* as for CHLOROFORM.

### BICHROMATE OF POTASSIUM.

*How taken.*—Accident ; suicide. Extensively used in the arts, especially by dyers. Used in treatment of various gastric disorders in doses of from  $\frac{1}{12}$  to  $\frac{1}{6}$  grain.

*Symptoms.*—Powerful irritant poison. Acute pain in abdomen. Constant and violent vomiting and purging. Pupils dilated. Violent cramps in legs. General depression often very great, pulse weak, skin covered with clammy perspiration. Urine suppressed or passed in small quantity.

Workmen engaged in manufacture suffer from bitter nauseous taste in mouth, irritation of mucous membrane of nose, incessant sneezing, increased secretion of tears, and even severe inflammation of eyes. Chronic sores on hands, feet and shoulders. Attacks of conjunctivitis not uncommon. Acts as a caustic when there

is the slightest abrasion of the skin. Eruptions similar to eczema or psoriasis are often produced, and there may be ulcers having somewhat the appearance of hard chancre. May in time lead to destruction of septum of nose, for which it seems to have a special affinity.

*Fatal dose.*—Two drachms fatal in four hours, but recovery from half an ounce. Severe symptoms from merely tasting a solution of it.

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard, sulphate of zinc, or or ipecacuanha.

2. **Carbonate of magnesium** or **chalk** in milk, or white of egg in milk or in water.

3. **Barley water**, arrowroot or thick gruel.

4. Warmth to extremities, stimulants freely if collapse; hypodermic injection of morphine to allay pain.

## BISMUTH.

Nitrate used as a face powder under name of "Pearl white." Dose of two drachms proved fatal. Symptoms were a strong metallic taste in the mouth, burning pain in the throat, vomiting and purging, and spasms of the arms and legs. At the autopsy the throat, windpipe and gullet were found to be inflamed, and there was

inflammatory redness of the mucous membrane of the stomach and the whole of the intestinal tract. In another case a subnitrate of bismuth dressing applied to an extensive burn caused somewhat similar symptoms, which subsided on discontinuing the dressing. Most of the recorded cases are of some antiquity and the symptoms were probably due to the presence of arsenic or some other impurity. The salts of bismuth now supplied are pure, and I have constantly given from two drachms to half an ounce of the carbonate three times a day without any bad effect. The "bismuth breath" resembling the odour of garlic formerly met with in some cases was due to the presence of a trace of tellurium. For treatment, see ARSENIC.

#### BITTER ALMOND WATER.

Twenty drops might give rise to dangerous symptoms. For treatment, see PRUSSIC ACID.

#### BLUE VITRIOL, BLUE STONE OR BLUE COPPERAS.

Sulphate of copper. See COPPER.

## BRUCINE.

An alkaloid found in conjunction with strychnine in Nux Vomica (*Strychnos Nux Vomica*) and St. Ignatius Bean (*Strychnos Ignatia*). Treatment as for STRYCHNINE.

BRYONY (*Bryonia Dioica*).

Grows wild in the hedges all over the country. Red berries attractive in appearance and sometimes eaten by children.

*Symptoms.* — Giddiness, delirium, vomiting, diarrhœa with watery motions, dilated pupils, coma.

*Treatment.*—1. **Emetic** of mustard, salt, sulphate of zinc or ipecacuanha.

2. **Stimulants**, brandy, chloric ether and sal volatile freely.

## BURNETT'S FLUID.

A solution of impure chloride of zinc, about 220 grains to the ounce. Used as disinfectant. A powerful corrosive. Mistaken for fluid magnesia, for mineral waters, also for pale ale.

Death from a mouthful, recovery from half an ounce. For treatment see ZINC.

*Tests.*—Nitrate of silver gives a white precipitate. Ammonia gives a white precipitate soluble in excess and reprecipitated by sulphuretted hydrogen. Sulphide of ammonium gives in neutral or alkaline solutions a white precipitate. Ferrocyanide of potassium gives a white gelatinous precipitate—a very delicate test.

### BUTLER'S VERMIN KILLER.

Contains 5 per cent. or more of strychnine mixed with flour and soot. Sixpenny packet weighs about a drachm, and contains from two to three grains of strychnine. For treatment, see STRYCHNINE.

### CAFFEINE.

Usually prescribed as the citrate. Case of poisoning by a drachm of the citrate given in mistake for the effervescing salt. Recovery after taking 200 grains.

*Symptoms.*—Burning pain in throat and gullet, giddiness, faintness, nausea, numbness, pain and tenderness in abdomen, great thirst, dry



tongue. Tremors of extremities, diuresis, weak pulse, cold skin, collapse. Recovery under treatment.

*Treatment.*—1. **Emetic** of mustard, carbonate of ammonium, ipecacuanha or salt.

2. **Stimulants.** To be given freely. Brandy, champagne, sal volatile, or spirits of chloroform. Friction with warm hand. Warmth to extremities. Massage.

3. **Morphine and Atropine.** Hypodermic injection of morphine half a grain, with atropine  $\frac{1}{50}$ th of a grain.

## CAMPINE.

Oil of turpentine purified by distillation with lime. See TURPENTINE.

## CAMPHOR.

*How taken.*—Given to children to play with. Popular remedy for many complaints—in solution for cold in the head, in solid form as a vermifuge. Essence of camphor or Rubini's solution is a saturated solution in alcohol, and is largely used in treatment of summer diarrhœa.

Spirit of camphor 1 in 10. Camphorated oil or camphor liniment 1 in 5. Compound liniment contains strong solution of ammonia.

*Symptoms.*—Odour of breath, languor, giddiness, faintness, disturbance of vision, noises in the ears, delirium, convulsions, especially in children, shrunken features, coldness of the surface, clamminess of the skin. Sometimes smarting and pain in urinary organs with desire to pass water. Pulse quick and weak, breathing difficult ; but no pain, no purging, no vomiting. Recovery may be preceded by long sleep with copious sweating.

*Fatal dose.*—Frequently gives rise to alarming symptoms, but rarely fatal. Death in a child from a piece the size of a nut. Recovery in different cases from 20, 25, 160, and 200 grains, but dangerous symptoms from even fifteen minims of the concentrated solution.

*Treatment.*—1. **Stomach-tube** or **Emetic** of apomorphine (10 minims of the one per cent. solution hypodermically), or of mustard (a tablespoonful of the powder in water), or of sulphate of zinc (20 grains in water), or of ipecacuanha (20 grains in water).

2. **Stimulants** freely, sal volatile or ether to inhale, or brandy injected under skin. If

camphor taken in solid form not wise to give spirits by mouth.

3. **Warmth** to the extremities by hot blankets and hot-water bottles. Rubbing with the warm hand, and with brandy. Massage. Alternate hot and cold douche to head and chest.

### CANTHARIDES—SPANISH FLY—BLISTER BEETLE.

*How taken.*—To procure abortion. As an aphrodisiac. In some restaurants an ingredient of their "special" coffee sold at 5/- a cup. Given as a "joke." Powder mistaken for jalap; used instead of pepper. Death from use of ointment in mistake for sulphur ointment.

*Symptoms.*—Burning sensation in throat and stomach, with pain and difficulty in swallowing. Vomiting of mucus mixed with blood—may contain shining particle of the powder. Diarrhœa, motions consisting of blood and slime. Salivation and swelling of the salivary glands. Incessant desire to pass water, but only a little blood or albuminous urine passed at each attempt (characteristic symptom). Peritonitis, high temperature, quick pulse, headache, loss of sensibility, convulsions, death.

*Fatal dose.*—Recovery from two drachms of the powder, death from twenty-four grains, also from an ounce. Recovery from six drachms of the tincture; in one case recovery from an ounce, in another death. The tincture varies much in activity. Sometimes the insects are exhausted with spirit, and then dried and sold again.

*Treatment.*—1. **Stomach=tube** if seen at once and condition of throat will admit of its use. If not, **Emetic** of apomorphine (10 minims of the one per cent. solution hypodermically). or of mustard, sulphate of zinc or ipecacuanha.

2. **Demulcent drinks.** Barley-water, thick gum and water, or white of egg and water, gruel, linseed tea. Not oil in any form.

3. **Morphine.** If much pain thirty minims of laudanum by mouth or half a grain of morphine hypodermically. If much diarrhœa and straining a half grain morphine suppository.

4. Hot baths or linseed meal poultices to the abdomen, when the more acute symptoms have subsided.

### CARBOLIC ACID—PHENOL.

*How taken.*—The commonest of all poisons, in England and Wales alone cause of 1,964 deaths in ten years. Favourite for suicidal

purposes from facility with which it is obtainable. Largely used as a domestic disinfectant, and often kept in wine or medicine bottles without label. The crude commercial carbolic acid used for disinfecting purposes contains from 15 to 60 per cent. of phenol, with a varying admixture of other coal-tar products. Some specimens contain very little phenol. Lotion administered by mistake for medicine; given instead of castor oil. Antiseptic dressing, and too strong an injection into abscess cavity. Sprays, and exposure to fumes. Rubbed into the skin to cure itch, and other skin diseases. Death from application in cancer of the womb. Injected into rectum to kill worms.

*Symptoms.*—Intense burning sensation extending from mouth to stomach coming on at once, even in act of swallowing, lips and mouth white and hardened. Skin cold and clammy; lips, eyelids, and ears livid. Pupils contracted. Vomiting not common, and may be difficult to excite. Urine diminished in quantity or suppressed; when passed dark in colour, and becomes black on exposure to air from formation of hydroquinone, an oxidation product of phenol. May be albumin and casts. Insensibility, coma, stertorous breathing, complete

abolition of reflex movements, respiration hurried and shallow, death. Bronchitis and pneumonia not infrequent sequelæ. May be great improvement with return of consciousness, and then after some hours death suddenly from collapse.

*Fatal dose.*—Minimum fatal dose one drachm, but recovery after taking 4 oz. of the crude acid. Half an ounce usually fatal. Death in half an hour, or not till after sixty hours. Prognosis always grave.

*Treatment.*—1. **Epsom Salts.** Give half an ounce of sulphate of magnesium (**Epsom Salts**) or half an ounce of sulphate of sodium (**Glauber's Salts**) in half a pint or more of warm water. Soluble sulphates form sulphocarbulates in the blood, which are harmless.

2. **Soft Stomach-tube** to be introduced with the utmost caution from risk of perforating walls of œsophagus or stomach. Apomorphine and other emetics usually fail to excite vomiting.

3. Wash out the stomach with **Epsom Salts** or **Glauber's Salts** or **Soda**, or with **saccharated lime** dissolved in large quantities of tepid water, until the smell of the acid is no longer perceived. Leave the stomach full of the solution so that it may be absorbed.

4 **White of egg** in water in large quanti-

ties. Administration of castor oil or olive oil not advisable, as phenol is soluble in oils.

5. Give **stimulants** freely; ether or brandy hypodermically, or brandy by the rectum. Safer not to give alcohol by mouth if other methods available.

6. Apply **warmth** to the whole body. Friction with the warm hand. **Interrupted current** to the extremities.

7. **Strychnine** (gr.  $\frac{1}{20}$ ) if indications of heart failure, gr.  $\frac{1}{50}$  of sulphate of atropine (2 minims of 1 in 100 solution).

8. **Artificial respiration** if threatened respiratory failure. Bleeding and transfusion of saline in desperate cases.

*Tests.*—May be separated from organic mixtures by distillation after addition of sulphuric acid. Gives fine purple colour with ferric chloride, and yields white precipitate (tribromo-phenol) with bromine water.

May get gangrene of fingers from using strong carbolic acid lotions.

### CARBONIC ACID GAS—CHOKEDAMP— AFTER-DAMP.

*How taken.*—May be accidentally inhaled in many ways, *e.g.*, sleeping in an overcrowded

room; cleaning out vats in which fermentation has been going on; sleeping over a lime kiln; gas following explosions in coal mines; in wells or cellars where gas has accumulated from decomposing substances; travelling by underground railway. Use of charcoal stoves or even gas stoves if adequate ventilation not provided.

*Symptoms.*—Irritation of throat, weight and pains in the head, drowsiness, giddiness, singing in the ears, gradual loss of muscular power until the patient falls insensible, his head bowed on chest. Lividity of face and body generally, violent action of heart, hurried respirations, coma, death.

*Fatal dose.*—Difficult to say, but probably from 10 to 15 per cent. of carbonic acid in the atmosphere would prove fatal. This percentage will usually extinguish a taper. Even 2 per cent. would produce serious symptoms if inhaled for long.

*Treatment.*—1. Plenty of **fresh air**, open all doors and windows.

2. **Artificial respiration** to be kept up steadily and unceasingly.

3. **Ammonia** to the nostrils. **Friction** and warmth to the extremities. Interrupted current to the limbs.



4. **Stimulants** in moderate quantities. Injection of a pint of hot strong coffee into the rectum. The inhalation of **oxygen**. **Cold douche** to head and chest.

5. **Bleeding** or **Transfusion** might do good.

6. The **catheter** may have to be used in prolonged cases.

### CARBONIC OXIDE GAS—CARBON MONOXIDE.

Much more active than carbonic acid gas. So deadly that it kills almost at once. Common cause of death in France from use of charcoal stoves. "Geysers" in unventilated bath-rooms should be regarded with suspicion. Probably 2 per cent. in the atmosphere would prove fatal. Occurs with carbonic acid gas under circumstances already enumerated.

*Symptoms.*—Giddiness, headache, weak pulse, coma, vomiting. The coma may last for some hours or days after removal from influence of the gas.

Water-gas, obtained by passing steam over incandescent carbon, contains about 40 per cent. of carbonic oxide, the remainder being chiefly hydrogen. There have been many cases of

poisoning from this source, many of them on a large scale. The objection to its employment for domestic purposes is that it is practically odourless, so that no warning is afforded of its escape into a room. This difficulty might be obviated by mixing it with coal-gas or by the addition of mercaptan or some other substance having a powerful odour.

*Treatment.*—See CARBONIC ACID GAS.

### CAUSTIC POTASH—CAUSTIC SODA.

For symptoms, see POTASH.

*Treatment.*—1. Give large draughts of water mixed with **vinegar, acetic acid, citric acid, lemon=juice,** or orange-juice.

2. **Demulcent drinks,** such as raw white egg and water, milk, gruel and barley-water. **Olive oil** freely.

### CESSPOOL GAS—CESSPOOL EMANA- TIONS.

For treatment, see SEWER GAS.

CHARCOAL FUMES. See CARBONIC ACID  
GAS.

## CHLORAL—CHLORAL HYDRATE.

*How taken.*—Popular sedative and narcotic. Taken by all classes of society to induce sleep, and as a “restorative.” Deaths by injudicious use frequent. Not uncommonly used for suicidal purposes. Strength of syrup 10 grains in the drachm. Syrup sold under guise of a patent medicine without restriction. Hunter’s Chloral is syrup of chloral flavoured with syrup of tolu and elder-flower. Chloral rapidly accumulates and finally kills, by sudden paralysis of the heart. Twenty grains is the highest safe dose, and this should not be repeated oftener than once an hour, and after sixty grains have been taken not for some hours, except in urgent cases.

*Symptoms.*—Deep sleep, loss of muscular power, diminished or abolished reflex action and sensibility. Face livid and bloated, sometimes flushed, pulse either slow or very weak and quick. Diminished frequency of respiration, which is often sighing or stertorous. Pupils contracted during sleep, but on waking they dilate. Extremities and surface generally very cold, temperature falling as low as 91° F. May be an eruption on skin like urticaria if case

prolonged. Death by arrest of respiration or paralysis of the heart. In one case the patient after recovery became idiotic.

*Fatal dose.*—Bad symptoms from 10 grains. Death from 20 grains and from 30 grains; recovery from 180 grains, also in one case from 460 grains. Two cases of recovery from four ounces of syrup.

*Treatment.*—1. **Stomach=pump** or **Emetic** of mustard (a table-spoonful of the powder in water), or of sulphate of zinc (a scruple in water), or of ipecacuanha (twenty grains in water). Apomorphine may be used as an emetic, a hypodermic injection of 5 minims of the 1 in 100 solution, repeated if necessary. Use of stomach-pump may be continued with advantage for half an hour, water at a temperature of 105° F. being introduced freely.

2. Keep up the temperature by **hot blankets** frequently renewed, **hot=water bottles**, hot bricks and **dry friction**.

3. Prevent patient from sleeping, by **rousing** him in every way, by speaking to him sharply, flapping face and chest with wet towel, pinching, mustard to calves of legs, battery to limbs, &c., application of strong ammonia to nostrils.

4. Injection of a pint of hot strong **coffee** into rectum, to be repeated if necessary.

5. In bad cases, hypodermic injection of gr.  $\frac{1}{3}$  of nitrate of **strychnine**, or fifteen minims of tincture of nux vomica by mouth or rectum. It may be repeated if necessary, and improvement in the pulse and temperature is to be taken as an indication that it is doing good. In case in which four ounces of the syrup were taken by a woman, five hypodermic injections, of 4 minims each, of liquor strychninæ were given in an hour and ten minutes and she recovered.

6. **Artificial respiration** on slightest sign of failure. To be continued for some hours if necessary.

*Tests.*—Heated with caustic potash yields chloroform and potassium formiate. Chloroform recognised by its odour, and if chloral solution concentrated by separating as a heavy layer at the bottom of test tube. An organic mixture containing chloral yields chloroform on distillation after being rendered alkaline with caustic potash.

See also CHLORAL (Chronic Poisoning).

CHLORAL AND MORPHINE—CHLORAL  
AND OPIUM.

An unfavourable combination, and one of not infrequent occurrence. It is difficult to keep the patient awake, and at the same time to keep him warm. The condition of the heart has also to be taken into consideration, and it would not be judicious to walk the patient about as in ordinary opium poisoning.

*Treatment.*—**Stomach=pump** or **Emetic** of apomorphine, mustard, sulphate of zinc, or ipecacuanha. The stomach to be thoroughly washed out, coffee being used for the purpose if thought desirable.

2. Rouse the patient by flapping him with a wet towel. **Ammonia** to the nostrils. Cold douche to the head and chest, followed by warm **douche**.

3. Patient to be kept warm by hot blankets frequently renewed, hot-water bottles, hot bricks and dry friction.

4. Give a hypodermic injection of gr.  $\frac{1}{25}$  of **atropine** (4 minims of a 1 in 100 solution), repeating it in a quarter of an hour if necessary.

5. **Strychnine**. If the symptoms of chloral

poisoning predominate, give a hypodermic injection of gr.  $\frac{1}{32}$  of nitrate of strychnine, repeating it in half an hour if necessary ; or twenty minims of tincture of nux vomica may be given by mouth or rectum.

6. **Coffee.** Give hot strong coffee, or inject it into the bowel. **Artificial respiration** to be kept up for some hours.

### CHLORATE OF POTASSIUM.

From long-continued use may get pain in abdomen, loss of appetite, profuse diarrhœa, dyspnœa, feeble action of heart. A purpuric rash is not uncommon. From large doses may get toxic hæmoglobinuria. The patient is seized with a rigor, vomiting and diarrhœa set in, he becomes collapsed and cyanosed, falls into a state of stupor and soon dies.

### CHLORIDE OF ZINC. See ZINC.

### CHLORINE GAS. (INHALED.)

Used as a disinfectant and bleaching agent.

*Symptoms.*—Irritation of the throat, cough,

tightness of the chest, difficulty in breathing, inability to swallow.

*Treatment.*—Plenty of **fresh air**. Inhalations of **steam**. Inhalations of very dilute **ammonia** or **sulphuretted hydrogen**. Inhalation of **chloroform** or **ether** to ease the cough.

### CHLORODYNE

Is said to consist of chloroform, muriate of morphine (probably from 2 to 6 grains to the ounce), chloric ether, oil of peppermint, prussic acid, gum acacia and treacle. Some preparations contain tincture of capsicum and tincture of Indian hemp. The *Tinctura Chloroformi et Morphinæ Composita* of the British Pharmacopœia, an imitation of it, contains in ten minims  $\frac{3}{4}$  minim of chloroform,  $\frac{1}{2}$  minim of diluted hydrocyanic acid, and gr.  $\frac{1}{11}$  of morphine hydrochloride. For treatment, see OPIUM.

*Fatal dose.*—An ounce has proved fatal.

### CHLOROFORM. (INHALATION.)

*Symptoms.*—The symptoms are too well known to need enumeration.

*Treatment.*—1. Pull the **tongue** out with



the forceps, and see that the mouth is clear. See that there is no obstruction by artificial teeth.

2. Loosen everything about the chest; flap the face and chest with the end of a wet towel. Open doors and windows so as to have plenty of fresh air. Alternate cold and warm **douche** to chest and head.

3. **Artificial respiration** to be commenced **at once**—not faster than twenty in the minute.

4. Let the head be at a lower level than the rest of the body. Completely invert the patient for a moment, letting the head rest on the ground.

5. Inhalations of **nitrite of amyl**, but of doubtful efficiency. Injections of **strychnine** are useful.

6. **Battery.** Interrupted current, one pole at pit of the stomach and the other over the larynx. To be used cautiously and for a short time only. Strong currents are to be avoided. Hot sponges over the heart. Friction to lips and cheeks.

7. **Atropine.** Atropine has been recommended on theoretical grounds, but it is not likely to do much good after serious symptoms have set in; it might be tried, however, in doses of 4 minims of 1 in 100 solution hypodermically.

## CHLOROFORM. (SWALLOWED.)

*How taken.*—Suicide generally, sometimes by mistake.

*Symptoms.*—Smell in breath, anxious countenance, burning pain in throat, stomach, and over abdomen, coldness of extremities, staggering gait. May be vomiting, insensibility deepening into coma with complete anæsthesia, pupils dilated, breathing stertorous, skin cold, pulse imperceptible.

*Fatal dose.*—Death from one ounce, but several cases of recovery after taking two ounces.

*Treatment.*—1. **Stomach-tube** or **Emetic** of mustard, or sulphate of zinc, or ipecacuanha. Apomorphine may be used—10 minims of the 1 per cent. solution hypodermically.

2. Give large draughts of water containing **carbonate of sodium** in solution.

3. Rouse the patient in every way possible. Flicking with wet towel. Mustard to calves of legs and over the heart. Olive oil to relieve the burning pain.

4. Injection of a pint of hot strong **coffee** into the rectum.

5. Do not leave the patient for some hours, for there may be a relapse,

CHROMIC ACID. See BICHROMATE OF  
POTASSIUM.

## COAL GAS.

*How taken.*—Inhaled in various ways, by workmen at gas-works, by gas fitters, as the result of leaky pipes and taps, and perhaps, by gas not being properly turned off at night, and gradually filling the room or house when every one is asleep. Death from bursting of branch pipe leading from the main, and escape of gas into the house during the night. Toxicity probably due in great part to the carbonic oxide it contains.

*Symptoms.*—Headache and giddiness, loss of memory and muscular power, unconsciousness, pupils insensible and dilated, breathing laboured, convulsions, coma or asphyxia, death. Smell of gas in the room, and in the patient's breath.

*Treatment.*—1. Plenty of **fresh air**. Open all doors and windows.

2. **Artificial respiration** to be kept up steadily and incessantly.

3. **Ammonia** to the nostrils. **Friction** and warmth to the extremities. **Mustard** leaf or

mustard poultice to calves of legs. **Interrupted current** to extremities. Mustard over the heart.

4. **Stimulants** in moderate quantities by mouth or rectum. Enema of a pint of hot strong **coffee**.

5. The inhalation of **oxygen** with alternate cold and warm **douche** to head and chest.

6. **Bleeding** might do good. In prolonged cases it may be necessary to employ the **catheter**.

### COCAINE.

A solution of the hydrochlorate injected hypodermically or applied to the eye or a mucous membrane often gives rise to serious symptoms which not infrequently come on almost instantly. There are evidently curious individual peculiarities in its action, the following symptoms having been noted in different cases:—pallor of the face, faintness, giddiness, paroxysmal dyspnœa, a rapid and weak pulse, nausea and vomiting, intense prostration amounting almost to collapse, pain in the back especially in the lumbar region, tingling all over the body, dryness of the skin,

mental excitement, delirium, epileptiform convulsions and spasmodic contraction of the muscles of the arms and legs. Serious symptoms have resulted from half a grain.

Any dose above one grain applied to a mucous membrane or injected hypodermically may give rise to alarming symptoms.

*Fatal dose.*—Three and a half grains subcutaneously produced death in twenty-four minutes; two-thirds of a grain in five hours. Recovery from forty-six grains by stomach. Drug rapidly eliminated by kidneys; prognosis bad in albuminaria. Patients addicted to morphine take large doses with comparative impunity.

A patient suffering from extensive disease of the lungs, kidneys, and bladder died within an hour after taking a mixture containing twenty-two grains of cocaine. Recovery after the administration of fourteen grains hypodermically.

*The treatment* consists of the administration of stimulants—ether and brandy, for example—and the inhalation of nitrite amyl. The ether may be given hypodermically in five-minim doses. Artificial respiration.

See also COCAINE (Chronic Poisoning).

COCCULUS INDICUS—ANAMIRTA  
COCCULUS.

INDIAN BERRY—LEVANT NUT.

See PICROTOXIN.

COLCHICUM—MEADOW SAFFRON—  
AUTUMN CROCUS—COLCHICUM  
AUTUMNALE.

*How taken.*—All parts of the plant poisonous. Wine taken by mistake for sherry and other wines, once mistaken for quinine wine. Given for criminal purposes.

*Symptoms.*—Burning pain in stomach, persistent vomiting and purging, the stools being mixed with blood. Irritation of the throat and intense thirst. Great prostration, pain in head, pinched face, profuse perspiration, dilated pupils, small weak or intermittent quick pulse, muscular twitchings, pain in extremities or perhaps in joints. Mental faculties may be unimpaired, or there may be delirium. Sometimes suppression of urine. Symptoms sometimes not unlike malignant cholera.

*Fatal dose.*—Of the wine, death from two

ounces, from an ounce and a half, and from an ounce. Recovery from one ounce. In cases of acute gout, I have frequently given drachm doses three times a day for a week with no worse symptoms than a little purging and perhaps vomiting. Of the tincture, death from an ounce and a half, recovery from one ounce.

*Treatment.*—1. **Stomach-pump** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha.

2. Give **tannic** or **gallic acid** in half-drachm doses, frequently repeated, or strong tea.

3. **Demulcent drinks**, such as white of egg and water, barley water or arrowroot.

4. **Stimulants**, if signs of collapse, brandy, chloric ether, sal volatile.

5. A hypodermic injection of half a grain of **morphine**.

### COLOCYNTH—BITTER APPLE.

*How taken.*—Powder extensively employed for procuring abortion, “as much as will go on a threepenny bit.”

*Symptoms.*—Persistent vomiting, purging, the motions containing mucus and perhaps blood, exhaustion, cold extremities, weak pulse, collapse, death.

*Fatal dose.*—A teaspoonful and a half have proved fatal.

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard and water, sulphate of zinc, or ipecacuanha.

2. **Camphor.** Ten drops of spirit of camphor, or three drops of essence of camphor on sugar or in milk every quarter of an hour.

3. **Laudanum.** Thirty minims of laudanum in brandy and water, or, if patient unable to swallow, to be mixed with two ounces of starch and water, and injected into the bowel.

4. **Stimulants** freely—hot brandy and water, chloric ether and sal volatile.

5. **Demulcent drinks**, white of egg and water, thick gum and water, barley water and arrowroot.

6. **Warmth.**—Patient to be kept warm by hot blanket, hot-water bottles, hot bricks to feet and friction with warm hand. Hot linseed-meal poultices to the abdomen.

### CONIUM—HEMLOCK—COMMON OR SPOTTED HEMLOCK.

An indigenous plant found in hedges, easily recognized by its mousey odour.



*How taken.*—Mistaken for parsley, eaten in salad and in soup. In one case children killed by blowing a whistle made from the twigs.

*Symptoms.*—Weakness of the legs, faltering gait, staggering as if intoxicated, loss of power in the arms, loss of all voluntary power, pupils dilated and fixed, loss of sight, inability to swallow, paralysis of muscles of respiration, asphyxia, death.

*Treatment.*—1. **Stomach=pump** or **Emetic** of mustard, sulphate of zinc or ipecacuanha.

2. **Tannic acid** or **gallic acid**, or decoction of oak bark, or strong tea in unlimited quantities, after which the stomach should be again emptied.

3. **Stimulants**, brandy, chloric ether, ammonia, &c.

4. **Warmth** to the extremities by hot-water bottle and hand-rubbing. **Artificial respiration.**

5. The hypodermic injection of gr.  $\frac{1}{100}$  of sulphate of **atropine** (2 minims of a 1 in 100 solution) may be tried.

## CONVALLARIA MAJALIS—LILY OF THE VALLEY.

Used as a diuretic and remedy for certain forms of heart disease. Contains two active principles, convallarin and convallamarin. Convallarin possesses purgative properties only, whilst convallamarin is a heart poison allied to digitalin, helleborin, and the upas principles. Treatment as for DIGITALIS.

## COPPER.

*How taken.*—Generally as the sulphate—blue vitriol, or blue stone—or as verdigris. By accident, for purpose of procuring abortion, suicide, murder. Most cases of copper poisoning, however, are from use of copper vessels in cooking. Articles of food, if not acid, may be boiled in clean copper vessels without risk, but food must not be left standing in copper vessels. Much safer to have all copper vessels used for culinary purposes tin-lined. Chronic poisoning may occur in many ways:—used for “coppering” or imparting a green colour to preserved vegetables such as peas, beans, and cucumbers, and to pickles; to colour sweets and toys; lemon-juice kept in copper tanks; use of green wrappers

for foods ; use of inferior gold for artificial teeth ; manufacture of artificial flowers ; drugs kept in copper vessels ; workers in copper or bronze. Traces of copper sometimes found in aërated waters and essential oils from use of copper condenser imperfectly lined with tin. Used in brass-founding—see **Brass-worker's Disease**.

*Symptoms.*—Metallic taste in mouth, constriction in throat and gullet, griping and colicky pains in the abdomen, nausea and vomiting, purging with much straining, partial suppression of urine, jaundice. Hurried and difficult breathing, small quick pulse, great weakness, intense thirst, cold perspiration, coldness of limbs, headache, giddiness, coma, death.

In chronic copper poisoning a green line on the margin of the gums has been observed, indistinguishable from the blue line of lead. Wrist-drop and cramps have also been recorded. It is doubtful if small doses of copper frequently repeated do any harm. Sulphate of copper is an excellent nervine tonic, and I often give it in grain doses in a pill three times a day for weeks together without the production of any inconvenience to the patient.

*Fatal dose.*—Death from one ounce of ver-

digris. Recovery from an ounce of sulphate, and also death.

*Treatment.*—1. Give milk and eggs freely.

2. **Stomach=pump** or **Emetic** of mustard and water, or ipecacuanha. Large draughts of tepid water.

3. Give **barley=water**, or arrowroot, or gruel.

4. Give hypodermic injection of gr.  $\frac{1}{2}$  of **morphine**, or twenty-five drops of laudanum by mouth.

5. Apply linseed-meal **poultices** to abdomen.

*Tests.*—Chemical reactions characteristic and simple of application. Deposit of metallic copper from acidified solution on knife-blade or needle or on platinum foil in contact with zinc. With ammonia solution, blue precipitate soluble in excess forming a purple solution. Ferrocyanide of potassium gives chocolate precipitate or light red coloration, characteristic and very delicate.

## CORROSIVE SUBLIMATE—PERCHLORIDE OF MERCURY.

Used to kill insects and preserve specimens. Also to preserve timber from dry-rot. Has been dispensed in mistake for calomel. Danger-

ous symptoms from use of antiseptic solution as a surgical dressing, and for washing out cavities. External applications in the form of lotion or ointment may cause death. The liquor contains gr.  $\frac{1}{2}$  to the ounce.

*Symptoms.* — Lips and mouth white and swollen. Metallic taste in the mouth, sense of constriction in throat extending to stomach. Great pain in stomach. Nausea with vomiting of stringy masses of white mucus mixed with blood. Profuse purging, evacuations mucous in character and streaked with blood. Countenance may be swollen and flushed, or pale and anxious. Pulse small, frequent, and irregular. Tongue white and shrivelled. Skin cold and clammy and respiration difficult. Suppression of urine; syncope; convulsions; death.

Employed as an antiseptic dressing may be followed by diarrhœa, at first watery, then blood-stained, tenesmus, pains in the rectum, abdominal colic, nausea, and vomiting. Urine contains albumin, epithelial cells and granular casts. Slight disturbance of intellect and insomnia. If fatal termination, intelligence remains intact, but sight becomes dim, pulse is weak, pupils are contracted, temperature falls, and erythema appears in a pronounced form.

*Fatal dose.*—Probably from 3 to 5 grains, but recovery from even an ounce when taken on a full stomach and copious vomiting promptly induced.

*Treatment.*—1. **White of egg** (unboiled), mixed with water, to be given in unlimited quantities. Flour and water, arrowroot, or gruel, if at hand. Barley water. The albuminate of mercury so formed must be removed from the stomach as soon as possible, as it is soluble in excess of albumin and may be absorbed.

2. **Stomach=pump** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha. Apomorphine may be used as an emetic.

3. **Stimulants** if much depression.

## CRAYONS—COLOURED CRAYONS— FRENCH CHALKS.

Many very poisonous. Often contain white lead covered with some vegetable substance. Some consist of Prussian blue mixed with Dutch pink. Some probably contain chromium. Arsenic common in cheaper kinds of artist's colours and crayons. Are sucked by

children with avidity and sometimes eaten by them in mistake for sweets.

*Symptoms.*—Vary with composition of the crayon and the quantity taken, but usually purging, vomiting, and intense thirst, with perhaps convulsions and death.

*Treatment.*—Much will depend on symptoms. But safe to give an **emetic** of sulphate of zinc, or mustard and water, and to follow this with half a tumblerful of dialysed iron in water.

#### CREASOTE. See CARBOLIC ACID.

#### CREOLIN.

This is a coal-tar derivative employed as a disinfectant. Is said to consist of 20 per cent. cresylic acid with resin soap. It contains phenol, naphthalene and various hydrocarbons. It is not a very active poison, but after two and a half ounces patient comatose and cyanosed and urine dark green in colour.

Recovery after nine ounces.

Treatment as for CARBOLIC ACID.

## CROTON OIL.

*How taken.*—Taken by mistake for castor oil. Liniment taken by mistake. Bad effects even from inhaling dust from seeds.

*Symptoms.*—Intense pain in abdomen. Vomiting, purging, the stools being watery in character. Pale face, pinched features, small thready pulse, moist skin, collapse, death.

*Fatal dose.*—From 15 to 20 minims might prove fatal, but recovery from half a drachm or more.

*Treatment.*—1. **Stomach-pump** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha.

2. **Demulcent drinks** to be given freely. Barley water, white of egg and water, gruel, arrowroot.

3. **Camphor.** Three drops of the essence, or ten drops of the spirit, on sugar or in milk every ten minutes to the extent of five or six doses.

4. **Stimulants** freely, brandy, sal volatile, chloric ether.

5. A hypodermic injection of gr.  $\frac{1}{2}$  of **morphine**, or twenty minims of laudanum by mouth, to be repeated in an hour if necessary.

6. Linseed-meal **poultices** to abdomen.



## CURARI—WOORARA—URARI.

For origin and mode of preparation see abstract of Schomburgk's paper in *London Medical Record*, 1880, p. 168. See also Woodman and Tidy, p. 326, and *Popular Encyclopædia*, vol. ii. p. 676.

Several roots and barks enter into its composition, *e.g.*, the bark of *Strychnos toxifera*, *Strychnos Schomburgkii*, and *Strychnos cogens*.

General symptoms quite unlike those of poisoning by strychnine, never any tetanus. Paralyzes motor nerves and causes death by arresting respiratory movements.

*Treatment*.—1. **Artificial respiration** to be kept up steadily until the poison is eliminated.

2. **Stimulants** freely; brandy, hot gin and water, sal volatile, chloric ether, &c.

3. If surface wound, through which the poison has been introduced, apply a **ligature** tightly above it, and wash the wound thoroughly. When the symptoms have subsided, the ligature may be cautiously loosened for a moment and then quickly reapplied. This should be done several times, at intervals, so as to allow only a small quantity of the poison to pass into the system each time.

4. The surface of the wound should be thoroughly and repeatedly washed.

### CYANIDE OF POTASSIUM.

Used in photography, electro-gilding and silvering, also to clean lace. Purposes of suicide. Two and a half grains equivalent to one grain of anhydrous prussic acid, or fifty minims of B.P. solution.

*Symptoms.*—Appear at once. Severe burning pain in stomach, foaming at mouth, loss of power in limbs, insensibility, spasmodic breathing, convulsions, tetanic stiffness of jaws and body and death rapidly.

*Fatal dose.*—Five grains usually fatal.

*Treatment.*—1. Large draughts of **sulphate of iron** (green vitriol) and water, to be taken at once.

2. **Stomach=pump** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha.

3. Give **stimulants**, such as brandy, liquor ammoniæ, sal volatile, or chloric ether frequently repeated. If patient cannot swallow, to be given in an enema, or brandy may be injected under the skin. Inhalations of ammonia on a pocket-handkerchief should be tried.

4. Alternate hot and cold **douche**, the water being poured over the chest from a height.

5. Hypodermic injection of atropine, gr.  $\frac{1}{50}$ , or tincture of belladonna internally (30 drops in water).

6. **Artificial respiration** (20 in the minute) to be maintained for an hour or more.

7. **Battery.** Mild interrupted current to chest walls, and over heart.

### DALBY'S CARMINATIVE.

The composition of this preparation is said to be:—Carbonate of magnesium forty grains, oil of peppermint one minim, oil of nutmeg two minims, oil of aniseed three minims, laudanum five minims, spirit of pennyroyal and tincture of asafoetida of each fifteen minims, tincture of castor and compound tincture of castor of each thirty minims, and peppermint water two ounces. A teaspoonful contains one sixty-fourth of a grain of opium, or about  $\frac{1}{4}$  minim of laudanum.

Death from forty drops given to an infant.

The treatment is as for OPIUM poisoning.

### DATURINE.

A mixture of atropine and hyoscyamine.

DEADLY NIGHTSHADE—ATROPA  
BELLADONNA.

For symptoms and treatment, see BELLA-  
DONNA.

Often confounded with Woody Nightshade or Bitter Sweet (*Solanum dulcamara*), which has a purple flower and red berries, and with the Garden Nightshade (*Solanum nigrum*), which has a white flower and black berries. Medical witnesses and coroners often wrong on this point. If in doubt refer to plates in Bentley and Trimen, or Stephenson and Churchill.

DIGITALIS—FOXGLOVE—DIGITALIS  
PURPUREA.

*How taken.*—Mistaken for other drugs. Given ignorantly by quacks. Murder. Infusion has been recommended for spermatorrhœa; this might throw light on an otherwise obscure case. Case of poisoning from taking pills of digitalis furnished with a slowly soluble coating.

*Symptoms.*—Purging with severe pain in abdomen. Vomiting, vomited matter having a grass-green colour. Pulse slow, small, irregular and infrequent. Headache, lethargy followed

by delirium and convulsions. Pupils dilated, insensible to light, skin cold, pallid, covered with sweat. Urine suppressed. Coma and death quite suddenly.

*Fatal dose.*—A somewhat uncertain poison. Recovery after taking two ounces of the tincture.

*Treatment.*—1. **Stomach=pump** or **Emetic** of mustard, or sulphate of zinc, or ipecacuanha. Apomorphine may be used as an emetic.

2. Twenty grains of tannic or gallic acid in hot water, repeated frequently, or hot strong tea or coffee.

3. **Stimulants**, such as hot gin or brandy and water, sal volatile, chloric ether injected into rectum if not retained by stomach.

4. A hypodermic injection of gr.  $\frac{1}{20}$  of aconitine, or ten minims of the tincture of aconite by mouth or rectum, to be repeated in half an hour if obvious improvement in the heart's action.

5. The **recumbent position** to be strictly maintained for some time after all symptoms have subsided.

*Tests.*—Pharmacological action on frog's heart characteristic of the group. Best chemical test is to moisten trace of digitalin with sulphuric acid and then apply bromine vapour, when a violet coloration is produced.

## DIONIN.

This is the mono-ethyl ester of morphine hydrochloride. It is a white crystalline powder soluble in seven parts of water. Dose from  $\frac{1}{6}$  to  $\frac{1}{4}$  of a grain. The treatment for an over-dose is the same as for morphine.

## DUBOISINE.

Is probably identical with hyoscyamine.

One case of poisoning from taking eye-drops instead of medicine.

For treatment, see ATROPINE.

## EMERALD GREEN—SCHEELE'S GREEN.

An arsenite of copper. Largely employed in the arts and manufactures. Constitutes wholly or in part many green pigments, such as "Mineral Green," "Brunswick Green," and "Vienna Green." Different shades are produced by its admixture with whiting or oxide of zinc. Largely used in wall papers, also to colour artificial flowers, wreaths, tarlatan dresses, wafers, confectionery, and even air-balls. Many cases of poisoning from sucking water colours. Many cases of obscure illness have

been traced to presence of arsenic in wall papers.

*Symptoms.*—Those of chronic arsenical poisoning; often very severe, the effects lasting months or even years.

For treatment, see ARSENIC.

### EPSOM SALTS.

Sulphate of magnesium is not usually regarded as a toxic agent, but a boy nearly lost his life from taking an ounce for constipation. He was deeply cyanosed, the conjunctivæ were congested, the radial pulse could not be felt, the extremities were cold and there was spasmodic contraction of the right arm with pronation of the hand. He recovered in about twelve hours, the treatment being ether, ammonia and strophanthus. In another case an ounce proved fatal. Symptoms in these exceptional cases may be due to absorption of ptomaines from intestines, as in the case of enema rash.

### ERGOT.

Given to procure abortion. Action on parturient uterus very certain, action on pregnant uterus very uncertain. Epidemics of

gangrene from eating bread made with ergotised rye, now rare. Ergotin is a watery extract, not an alkaloid. Used hypodermically or in form of pill for arrest of hæmorrhage.

*Symptoms.*—Toxic action slight. Even in ounce doses the fluid extract induces no poisonous symptoms unless patient pregnant. In one case tingling in fingers and feet, cramps in legs, arms and chest, with dizziness and weakness, feeling of coldness all over the body, pupils dilated and pulse small. Retching, vomiting, diarrhœa and increased salivary secretion in some cases.

*Treatment.*—1. **Stomach=pump** or **Emetic** of apomorphine mustard, sulphate of zinc, or ipecacuanha.

2. A purgative of castor oil, or of Epsom salts, or a drop or two of croton oil on the back of the tongue.

3. **Tannic** or **gallic acid** in half-drachm doses in water, frequently, or strong tea. To be introduced by the stomach-pump if necessary.

4. **Stimulants**, such as brandy, sal volatile, or chloric ether.

5. Inhalations of **nitrite of amyl**, or a fiftieth of a grain of **nitro=glycerine** by mouth (2



minims of the one per cent. alcoholic solution), repeated every quarter of an hour.

**6. Recumbent position.** Warmth to the extremities.

If threatened abortion from administration of ergot, rest and opium are the best remedies. If symptoms alarming and patient pregnant, the propriety of evacuating the uterus will have to be considered.

### ESSENTIAL OIL OF ALMONDS.

Contains from 10 to 15 per cent. of hydrocyanic acid, *i.e.*, is from five to eight times as strong as the prussic acid of the British Pharmacopœia. Death from 17 drops, recovery after taking four drachms.

For treatment, see PRUSSIC ACID.

### ESSENTIAL SALT OF LEMONS.

This is an acid oxalate of potassium. For treatment, see OXALIC ACID.

### ETHER (INHALATION).

*How taken.*—Used for anæsthetic purposes. Breaking of a jar of ether in room during night.

As an anæsthetic ether is not well adapted for (1) children, (2) patients with bronchitis, (3) operations by candle-light or when actual cautery has to be used. It often causes laryngeal spasm with violent struggling. Recovery is sometimes followed by excitement which may last for some hours. It is more expensive than chloroform from the larger quantity used, and its odour is to many very unpleasant. On the other hand, it is less dangerous to life than chloroform, vomiting is less frequent and not so troublesome, and it acts as a stimulant to the heart.

*Treatment.*—1. Pull the **tongue** well forward, and see that the mouth is clear. See that there is no obstruction by artificial teeth.

2. Commence **artificial respiration** at once, and keep it up for two hours if necessary—not faster than eighteen in the minute. Silvester's method is the best.

3. Loosen everything about the chest. Open the doors and windows so as to have plenty of **fresh air**. Rub the lips lightly but briskly from side to side with a dry towel and flick the chest with a wet towel.

4. **Strychnine** 3 to 5 minims of the 1%

solution hypodermically, repeated soon if necessary.

5. **Tracheotomy** may be necessary, but to prove of avail it should be performed early.

### ETHIDENE DICHLORIDE.

Sometimes used as an anæsthetic. Probably not a simple substance. Patient usually rendered nearly unconscious with laughing gas and then the ethidene gradually admitted. Stertorous breathing with dilated pupil, but if air admitted with every third or fourth respiration pupil contracts. Vomiting sometimes but not as a rule. Dreams pleasant, often of rapid travelling or of music. Patient awakes as from a natural sleep, after-effects slight. Exerts depressing action on heart and pulse, and as an anæsthetic is inferior to ether. Four deaths recorded.

*Treatment*.—1. Stop administration.

2. Pull tongue forward with forceps.

3. Artificial respiration, a towel or fan being used to blow away vapour from lips

4. Head low, legs and lower part of body raised.

## EXALGIN—METHYLACETANILIDE.

Serious symptoms are recorded from the administration of even small doses; numbness and tingling of the extremities, cyanosis, profuse salivation, vomiting, dyspnoea and a feeling of alternate expansion and contraction of the head. Noted after ten grains three times a day for ten days, six doses of a grain and a half each in two days, a single dose of five grains, a single dose of three grains. These symptoms in some cases have lasted for from nine to twelve hours, and the condition of the patient being serious. Treatment consists in the administration of an emetic, the free exhibition of stimulants, both by mouth and hypodermically, and the injection of strychnine.

## FILIX MAS—MALE SHIELD FERN.

Few cases of poisoning on record. Symptoms, purging, vomiting, great pain in the abdomen and collapse. In the case of a child  $5\frac{1}{2}$  years old two drachms of the liquid extract given in divided dose produced vomiting, somnolence, twitching, in five hours. Death from  $1\frac{1}{2}$  oz. Danger from divided doses and insufficient evacuation.

FLY POWDER—FLY PAPERS FLY  
WATER.

For treatment, see ARSENIC.

## FOOD POISONING.

Food poisoning may result from taking meat, fish, milk, cream or different kinds of grain.

1. **Meat Poisoning** (*Kreoloxismus*) may be the effect of eating meat of different kinds prepared in many different ways. The most frequent sources are pork, ham, pork-pie, veal-and-ham pie, potted meat, tinned meat, sausages, tongue, jelly and brawn. In the majority of cases it is due to the development of ptomaines. The food may be contaminated by being kept in defective hygienic surroundings—for example, in larders exposed to sewer gas. Contamination by copper in cooking is responsible for some of the cases. Attention has been directed of late to the frequent occurrence of poisoning from tinned foods. Meat which to all external appearance is sound may give rise to dangerous symptoms. The possibility of trichiniasis must not be forgotten.

The symptoms of meat poisoning probably

attack simultaneously several members of the party who have partaken of the meal. They are of the type of an acute gastro-enteritis—vomiting, purging, pain in the abdomen, cramps in the legs and collapse. The temperature is usually elevated, but may be subnormal. The ptomaine which is the cause of the mischief may be allied to atropine in action and produce, in addition to the above symptoms, intense thirst, dilatation of the pupils, dyspnœa and death from syncope.

**2. Fish Poisoning** (*Ichthyotoxismus*). May arise from eating tinned fish such as salmon or from shell fish. Cases of mussel poisoning are common. The symptoms are usually gastrointestinal in character, but in addition there may be an erythematous or urticarial rash. Many epidemics have occurred from oysters which have been exposed to sewage contamination.

**3. Milk Poisoning** (*Galactotoxismus*). Milk is readily contaminated and absorbs freely any volatile toxic agent to which it may be exposed. It may undergo chemical changes with the formation of tyrotoxin. When infected with saprophytic bacteria it produces diarrhœa in children. Condensed milk and ice creams are especially liable to undergo putrefactive changes.

#### 4. Cheese Poisoning (*Tyrototoxicus*).

Several cases are recorded of cheese poisoning, the symptoms being vomiting, diarrhoea, pain in the abdomen, cramps in the legs and collapse. On extracting the cheese with water, rendering alkaline and dissolving out with ether, needle-shaped crystals of tyrotoxin are obtained. In some cheeses in which tyrotoxin was not present a toxalbuminose was found.

5. Grain Poisoning (*Sitotoxicus*) is responsible for certain chronic conditions which may appear in an epidemic or endemic form. Ergotism results from eating ergotised bread, and although formerly common is now rarely seen. Its characteristic feature is dry gangrene of the extremities. Lathyrism or lupinosis is the outcome of using meal made from certain kinds of vetch, chiefly *Lathyrus sativa* and *Lathyrus cicera*. It is characterised by spastic paralysis of the lower extremities and may eventuate in paraplegia. Pellagra or Maïdismus results from the use of maize or Indian corn. The chief symptoms are headache, backache, and spasmodic contraction of certain groups of muscles. It usually ends up with paraplegia and dementia or attacks of mania.

The treatment of an acute attack of food

poisoning depends much on the symptoms. Even when there is vomiting with diarrhœa, an emetic followed by a full dose of castor oil will be found useful in ridding the stomach and intestines of the irritant. The patient should be put to bed in a warm room with poultices to the abdomen, and hot-water bottles or fomentations to the legs and feet. Stimulants should be given freely, and a hypodermic injection of morphine will be found useful.

#### FOWLER'S SOLUTION.

This is liquor arsenicalis, strength 1 in 100. For treatment, see ARSENIC.

#### FOXGLOVE--PURPLE FOXGLOVE— DIGITALIS PURPUREA.

Grows wild in almost every country in Europe. Favourite garden plant.

For treatment, see DIGITALIS.

#### FUNGI.

For treatment, see POISONOUS MUSHROOMS.



GAS (ESCAPE OF, INTO ROOM). See COAL GAS.

### GELSEMIUM.

The yellow, wild or Caroline Jasmine, *Gelsemium sempervirens*.

*How used.*—Alcoholic extract and tincture are official. Active ingredient of several quack remedies, one of the most popular being called the "Electric Febrifuge." Gelsemium often used as a "pain-killer" and to induce abortion. Has been taken by mistake. For table of cases, see author's "Gelsemium as a Toxic Agent," *Lancet*, June 15th and 28th, 1878.

*Symptoms.*—Pain, in the brows followed by giddiness, pain in the eyeballs and dimness of sight. Ptosis, the patient being quite unable to open his eyes fully. Diplopia, everything being seen double. Weakness in lower extremities, the patient staggering and swaying from side to side as he walks. Great pain in chest, suffocative spasm, struggling for breath, foaming at mouth, coma and death.

Chronic gelsemism is occasionally met with, the drug being taken for the relief of pain. The usual symptoms are restlessness, emaciation and

listlessness. The mind is troubled by vague fears and there are sensory hallucinations. Vision is disturbed and mental decay sets in prematurely.

*Fatal dose.*—Minimum fatal dose of liquid extract about two drachms. A drachm of the tincture may be given hourly for three or four hours without producing very marked symptoms.

*Treatment.*—1. If seen soon after the dose has been taken the **stomach=pump** should be employed or an **emetic** of mustard (a table-spoonful in water) might be given. Should a long interval have elapsed the emetic would be useless and would probably increase the prostration.

2. A hypodermic injection of gr.  $\frac{1}{80}$  of **atropine** should be given, and repeated in a quarter of an hour if failure of respiration. In the absence of atropine, thirty drops of tincture of belladonna by mouth.

3. **Stimulants.** Brandy, chloric ether, sal volatile, if sign of failure of heart's action.

4. **Artificial respiration** should be kept up steadily for at least three hours.

5. The cold and warm **douche** alternately over both head and chest.

## GIBSON'S VERMIN KILLER.

Said to contain about half a grain of strychnine in each powder.

For treatment, see STRYCHNINE.

## GODFREY'S CORDIAL.

Said to be a mixture of sassafras, treacle and laudanum. It contains half a grain of opium in the ounce. In five years fifty-six deaths recorded. The fatal dose for an infant is about a teaspoonful.

For treatment, see OPIUM.

## HAIR DYES.

Those for darkening the hair have almost all the same composition, and consist of acetate of lead in solution, with sulphur suspended in the fluid. If there are two bottles, one usually contains ammonia nitrate of silver and the other pyrogallic acid. If a hair dye is warranted "perfectly harmless" and free from any "injurious substance" it may be taken for granted that it contains lead. Some of these "harmless"

solutions contain as much as ten grains of acetate to the ounce. Preparations for making the hair light consist of peroxide of hydrogen.

### HEMLOCK—CONIUM.

The common greater or spotted hemlock (*Conium maculatum*) is an indigenous plant which grows wild in almost every climate, by road sides, in hedges and waste places. Flowers in June and July. Frequently confounded with other umbelliferous plants. The lesser hemlock or fool's parsley (*Æthusa cynapium*) has no spots on the stem, and the presence of the beard serves to distinguish it from all other Umbelliferae. The wild cicely (*Charophyllum sylvestre*) has a spotted stem, but is covered with hairs. The five-leaved water hemlock (*Enanthe phellandrium*) grows in ponds and the stem is not spotted.

For treatment, see CONIUM.

### HENBANE—HYOSCYAMUS NIGER.

Grows in waste places, chiefly on dry calcareous soil.

For treatment, see ATROPINE.

## HEROIN.

This is the diacetic ester of morphine. It is a white crystalline powder nearly insoluble in water, but forms a hydrochlorate that may be used hypodermically. The dose is from  $\frac{1}{12}$  to  $\frac{1}{8}$  grain. Two and a half grains produced great prostration, a rapid fall of temperature, contracted pupils and spasmodic twitching of the limbs. Recovery after nine grains.

Treatment as for MORPHINE.

HOLLY. (*Ilex aquifolium*.)

Bad effects from eating the berries in a few cases, chiefly children. Common symptoms are vomiting, pain in head and abdomen, purging, contraction of pupils, drowsiness, loss of consciousness and collapse. Treatment, hot water to facilitate the vomiting, stimulants freely, friction to limbs with warm hand, hot blankets, hot-water bottles to extremities, coffee by rectum, and hypodermic injection of morphine.

## HUNTER'S CHLORAL.

Syrup of chloral flavoured with syrup of tolu and elder flower. Strength ten grains or more

to the drachm. Probably varies, for at an inquest was stated to be twenty-five grains to the drachm.

### HYDROCHLORIC ACID—MURIATIC ACID—SPIRITS OF SALT.

*How taken.*—Cases of poisoning not common. Usually mistaken for beer or brandy.

*Symptoms.*—Burning heat extending from throat to region of stomach, vomiting of acid fluid of a dark colour mixed with mucus and altered blood. Tongue swollen and dry, great thirst, difficulty in swallowing. Pulse small, frequent and irregular, skin cold and clammy. Profound collapse. May be respiratory symptoms from bronchitis. The mind usually remains clear till the last. Death may be delayed for some weeks.

*Fatal dose.*—A drachm usually fatal, but recovery from larger quantity, even an ounce. Death in two hours, usually eighteen to thirty hours.

*Treatment.*—1. Large draughts of **soda and water** to be taken at once. **Carbonate of potassium**, carbonate of sodium, ammonia, sal volatile, or common washing soda to be taken

freely, well diluted with water. Magnesia or lime water may be used if at hand.

2. Milk, oil, thick gruel, white of egg and water, gum and water, and linseed tea are all useful.

3. A hypodermic injection of **morphine** to ward off shock.

As a rule the stomach-pump cannot be employed with safety. The question of prompt surgical treatment should be considered.

## HYDROCYANIC ACID—PRUSSIC ACID.

*How taken.*—Accident. Suicide. Murder. Inhalation of vapour of anhydrous acid. The dilute acid of the British Pharmacopœia should contain 2 per cent. of anhydrous acid. Specimens, however, vary much in strength, some being as low as 0·6 and others as high as 3·2 per cent. This variation depends on the mode of manufacture, the length of time the specimen has been kept and the degree of exposure to light. Scheele's acid is a 4 per cent. solution.

*Symptoms.*—Come on in act of swallowing, or almost immediately. Giddiness, staggering, insensibility and loss of motor power. Eyes

fixed and glistening, pupils dilated and not acting to light, limbs flaccid, skin cold and covered with clammy perspiration, pulse imperceptible. Violent gasping for breath, panting respiration and perhaps tetanic convulsions. When a fatal dose is taken the patient is nearly always insensible in two minutes. The poison is rapidly eliminated by the breath, so that if life can be maintained for even half an hour recovery almost certain.

*Fatal dose.*—Smallest fatal dose thirty minims of the official solution equivalent to six-tenths of a grain of the anhydrous acid. From forty minims to a drachm would probably prove fatal. Recovery from half an ounce of the official preparation equal to 4·8 grains of the anhydrous acid. Acts equally energetically whether swallowed, applied externally, dropped into the eye or inhaled. Usually proves fatal very quickly, shortest time two minutes, longest recorded fatal case an hour and a half. Ample time to cry out and even to pass from one room to another. Cases recorded of people who have fallen down insensible from merely smelling a bottle of the strong acid.

*Treatment.*—1. Give **stimulants**, brandy, chloric ether, ammonia, sal volatile, *ad libitum*.



If patient cannot swallow give an enema, or brandy may be injected hypodermically. Inhalations of **ammonia** on a pocket-handkerchief.

2. Alternate hot and cold **douche**, the water being dashed over the patient, or poured over head and chest from a height.

3. **Artificial respiration** (about 20 in the minute) to be kept up steadily. Inhalation of oxygen.

4. **Stomach=pump** or **Emetic** of mustard (a table-spoonful in water), or of sulphate of zinc (half a drachm in water), or of ipecacuanha wine (an ounce), if a large quantity taken, and the patient seen at once. Probably, however, no time to give an emetic.

5. A hypodermic injection of gr.  $\frac{1}{60}$  of **atropine** or 30 drops of tincture of belladonna by mouth. To be repeated if necessary.

*Tests.*—The odour of hydrocyanic acid is characteristic, and in the case of very dilute solutions becomes more pronounced on the application of warmth. The vapour, which is very volatile, renders turbid a drop of nitrate of silver solution placed in a watch-glass or on a microscope slide. Manipulated in the same way it converts a drop of ammonium

sulphide into ammonium sulphocyanide, which on being evaporated to dryness on a water-bath gives a blood-red coloration with ferrie chloride diluted to the point of being almost colourless. Scheele's test, which consists of the formation of Prussian blue, is perfectly reliable. All tests for hydrocyanic acid should be made with the least possible delay, as the drug is very volatile. All specimens preserved for subsequent analysis should be secured in well-stoppered bottles.

### HYOSCYAMINE.

An alkaloid obtained from *Hyoscyamus niger*. Is also contained in *Atropa belladonna*, *Datura stramonium* and *Duboisia myoporides*. *Hyoscyamus niger* also contains hyoscine. Stage of excitement less marked with hyoscyamine than with atropine.

For treatment, see ATROPINE.

### HYOSCYAMUS—HENBANE—HYOSCYAMUS NIGER.

*How taken.*—Plant eaten by mistake for parsnips. Henbane seeds have been mixed

with celery seeds by mistake and used for cooking purposes. Tincture mistaken for black-draught.

*Symptoms.*—Great excitement, fulness of pulse, flushing of face, giddiness, loss of power in limbs, dilated pupils, double vision, nausea, and vomiting. From large doses, loss or incoherence of speech, delirium, confusion of thought, insensibility and coma or perhaps a condition resembling mania.

For treatment, see ATROPINE.

### ICES—ICE-CREAM.

Water ices consist of little more than frozen water, sugar and colouring matter. Cochineal is sometimes used for colouring purposes, but aniline red is more commonly employed. The aniline may not be free from arsenic, but that is rarely taken into consideration. Cheapness is the desideratum, and for threepence enough aniline can be purchased to colour thirty gallons of ice, and poison fifty or even a hundred people. For cream ices a little milk is added, sufficient arrowroot to thicken it, and possibly a few rotten eggs. All the ingredients are of the cheapest possible description. To give the

requisite colour saffron may be employed, but the inexpensive turmeric is the favourite. Serious symptoms have followed the ingestion of ices sold in the street, as many as twenty patients having been treated in an afternoon. The symptoms were severe, and on analysis it was found that the vomited matter contained carbolic acid. It appears that this antiseptic, or preparations containing it, is used to prevent the decomposition of the materials used in making the ices.

In some cases of poisoning by ice-cream, it seems probable that the acute symptoms observed—dryness and constriction of the fauces, nausea, retching, vomiting and purging—were due to the development in the milk used for their manufacture of a highly poisonous alkaloid, to which the name tyrotoxicon has been given. Whereas in good drinking water there are rarely more than 100 bacteria per cubic centimetre, three samples of ice-cream which were analysed contained respectively 2,150,000, 4,200,000 and 5,340,000 bacteria. The filthy conditions under which cheap ices are vended in the public streets of London and other large towns constitute a public danger and a menace to the health of the poorer classes.

# IODINE.

*How taken.*—Preparations taken by mistake ; rarely used for purposes of murder or suicide.

*Symptoms.*—Pain and heat in throat and stomach, with vomiting and purging, vomited matter may be yellow from the iodine, or blue, if any starchy food in the stomach. Intense thirst. Stools may contain blood. Giddiness, faintness, and convulsive movements not uncommon.

*Fatal dose.*—Death from a drachm and a half of the tincture, but recovery after taking an ounce. Prognosis on the whole good.

*Treatment.*—1. **Starch** and water, arrowroot, gruel and white of egg, freely.

2. **Stomach-tube** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha.

3. Hypodermic injection of gr.  $\frac{1}{2}$  of **morphine** to relieve pain, to be repeated as often as necessary.

# IODOFORM.

Is a powerful antiseptic and deodorizer.

Two cases are recorded in which the internal administration of the drug produced

disagreeable symptoms. One patient took forty-two grains in eight days and the other seventy-five grains in seven days. The symptoms produced were giddiness, vomiting and deep sleep, from which the patient was roused with difficulty. This somnolence alternated with periods of excitement lasting several hours. This condition was followed by delirium, intense headache, a sense of impending death, spasmodic contractions of the muscles of the face and double vision. Deep inspiration alternated with periods of apnœa of about half a minute's duration. The symptoms gradually passed off in five or six days.

Cases of iodoform poisoning in surgical practice when the drug is used freely as an antiseptic dressing.

*Symptoms.*—Slight nocturnal delirium, unaccountable drowsiness and progressive emaciation with high temperature and rapid pulse. The symptoms sometimes closely resemble those of meningitis. In some cases death has occurred. Iodoform cannot be removed from a deep sinus or wound simply by washing with water. The best way would be to syringe it out with oil of eucalyptus. The symptoms occur most frequently when the iodoform is used in conjunction

with carbolic acid dressings, the explanation given being that the carbolic acid irritates the kidneys and renders them less able to eliminate the iodine.

*Dose.*—Recovery from four drachms taken internally.

### JABORANDI.

The hypodermic injection of gr.  $\frac{1}{60}$  of atropine will at once arrest the symptoms. Thirty minims of tincture of belladonna by mouth will answer almost as well.

### LABURNAM—CYSTISUS LABURNAM.

All parts of plants are intensely poisonous—wood, bark, leaves, flowers, pods and seeds. Most cases in children either from eating seeds or chewing the bark for its sweet taste. Poisonous properties depend on presence of cytisine, which is also contained in arnica.

*Symptoms.*—Come on rapidly or may be singularly delayed. Purging, vomiting, great restlessness, then drowsiness and insensibility with convulsive twitchings. Pupils dilated. Death due to asphyxia commonly preceded by cyanosis. In 155 cases only four deaths.

*Treatment.*—1. **Stomach=pump** or **Emetic** of mustard (a table-spoonful in water), or of sulphate of zinc (twenty grains in water), or of ipecacuanha wine (an ounce in water).

2. **Stimulants** in moderation; brandy, chloric ether, or sal volatile.

3. Injection of a pint of hot strong **coffee** into the rectum.

4. Alternate hot and cold **douche** to the head and chest. Warm applications with friction to the surface. Artificial respiration.

### LAUREL WATER.

Cherry laurel water, made by distilling cherry-laurel leaves with water, contains  $\frac{1}{10}$  per cent. hydrocyanic acid.

For treatment, see HYDROCYANIC ACID.

### LEAD.

Any compound of lead soluble in the gastric juice might if taken in sufficient quantity give rise to acute symptoms. Most of the cases occur from taking the acetate "sugar of lead." Sometimes the carbonate, "white lead," is taken,



and sometimes the subacetate in the form of Goulard's solution. Sugar of lead, formerly popular for suicidal purposes, now if taken at all generally by accident. It has been mixed with flour in place of alum. White lead has been mistaken for chalk, and Goulard's solution has been drunk instead of wine.

*Symptoms.*—Dryness of throat, metallic taste, great thirst. Colic, especially about the navel, relieved by pressure. Muscles of abdomen usually rigid. Always constipation. Cramps in the legs, cold sweats, paralysis of lower extremities, convulsions.

*Fatal dose.*—Patient should recover from an ounce of the acetate, which is not nearly such a powerful poison as is commonly supposed. Recovery from three-quarters of a pint of Goulard's solution. Recovery after taking an ounce of white lead.

*Treatment.*—1. **Stomach=pump** or **Emetic** of mustard (a table-spoonful), or of sulphate of zinc (twenty grains), or of ipecacuanha (forty grains in water).

2. Give half a drachm of dilute **sulphuric acid**, or aromatic sulphuric acid in water; or half an ounce of **sulphate of magnesium** (Epsom salts); or half an ounce of **sulphate of**

**sodium** (Glauber's salts); or all three may be given together freely diluted with water.

3. **Milk**, white of an egg and water, barley water. **Poultices** to abdomen.

4. If much pain, a hypodermic injection of gr.  $\frac{1}{3}$  of **morphine**.

*Tests*.—The characteristic tests for lead are sulphuric acid, a white precipitate; iodide of potassium, a yellow crystalline precipitate; bichromate of potassium, a yellow precipitate, and sulphuretted hydrogen, a black precipitate or coloration. The last is extremely delicate and will detect in solution one part in a million. Lead cannot be precipitated direct from albuminous organic mixtures with sulphuretted hydrogen.

See LEAD POISONING (Chronic).

## LOBELIA—INDIAN TOBACCO—LOBELIA INFLATA.

Much used by the Coffinites. Their theory is that "Heat is life and want of heat disease," so lobelia and capsicum are their chief remedies. Is also used by the "medical botanists" and "herbalists."

*Symptoms.*—Severe vomiting with intense depression and prostration. Headache, giddiness, tremors, insensibility, convulsions, collapse, death.

*Fatal dose.*—A drachm of the powdered leaves would probably prove fatal. More likely to kill in old people and young children, especially when it is not rejected by vomiting.

*Treatment.*—1. As a rule lobelia induces vomiting, and an emetic is not required. In elderly people or young children, it may be necessary to use the stomach-pump, or give an emetic of mustard, sulphate of zinc, or ipecacuanha wine.

2. **Tannic Acid** or gallic acid (half a drachm) frequently repeated, or strong tea. To be introduced with stomach-pump, or syphon if necessary.

3. **Stimulants.** Brandy, sal volatile, or ether, freely.

4. Twenty minims of tincture of nux vomica by mouth, or better, a hypodermic injection of gr.  $\frac{1}{25}$  of nitrate of **strychnine** (2 minims of a 1 in 50 solution).

5. **Warmth** to the surface by hot blankets and hot-water bottles.

6. The **recumbent position** to be strictly

maintained, even after the acute symptoms have subsided.

LORDS AND LADIES—COWS AND CALVES  
—THE PARSON IN THE PULPIT—  
WAKE ROBIN—CUCKOO-PINT.

(*Arum maculatum*.)

Common all over England, abounds in moist hedgerows and shady woods.

*How taken*.—Commonly by children. In one case by an adult for tape-worm.

*Symptoms*.—Swelling of the tongue, vomiting and severe purging, convulsions, dilated pupils, insensibility, coma.

*Treatment*.—1. Emetic of sulphate of zinc or of ipecacuanha. 2. Dose of castor oil. 2. Cup of strong coffee. 4. Linseed-meal poultices to abdomen if much pain.

LUNAR CAUSTIC—NITRATE OF SILVER.

Portions of stick sometimes swallowed in making applications to the throat.

*Symptoms*.—Sometimes whitish flaky matter is vomited, turning black on exposure to the air.

*Treatment.*—1. **Common salt** dissolved in water or milk should be given freely.

2. An **emetic** of mustard, sulphate of zinc, or ipccacuanha.

3. White of egg and water, barley water, arrowroot.

### LUCIFER MATCHES.

For treatment, see PHOSPHORUS.

### LYSOL.

A useful disinfectant prepared by the saponification of cresols. In cases of poisoning, treatment as for CARBOLIC ACID.

### MEAT AND MILK POISONINGS.

See FOOD POISONING.

### MORPHIA—MORPHINE.

The most important alkaloid of opium, although thebaine, which is a tetaniser and belongs to the strychnine group, is the most active. Morphine

may be a white powder, or in the form of six-sided prisms, or in white silky needles. Is practically insoluble in water, but forms soluble salts with acids. The hydrochlorate is in silky fibres.

*How taken.*—Carelessness in dispensing or prescribing; in one case twelve grains were ordered instead of a twelfth of a grain. Hydrochlorate of morphine given instead of hydrochlorate of quinine, the drugs having become mixed in the manufactory. Over-dose given hypodermically by accident. Patients should always be in bed when hypodermics of morphine given; never safe to give them to out-patients. Inadvisable to give them in diabetes mellitus, in advanced Bright's, or in extensive bronchitis. Local application to wounds and ulcers. The morphine and the morphine and ipecacuanha lozenges contain gr.  $\frac{1}{36}$  of the hydrochlorate in each.

*Symptoms.*—At first may be mental excitement of a pleasurable nature, with increased physical activity and acceleration of the heart's action. Then dryness of the mouth, increased thirst, headache, weariness, sense of weight in the limbs, incapacity for exertion, sleepiness, and diminished sensibility. This passes into a con-

dition of deep sleep from which the patient cannot be awakened ; reflex action ceases, eyes are half closed, the pupils strongly contracted (very rarely dilated), the lower jaw falls and the skin is cold and clammy, the only sign of life being the continuance of circulation and respiration. Respiration is slow, laboured, irregular and stertorous, and the pulse is feeble, compressible, and perhaps almost imperceptible. The pulse and respiration finally fail and death ensues.

*Fatal dose.*—Death from half a grain of the acetate in one case, and from a grain many times ; recovery after as much as twenty or thirty grains. With good treatment the patient ought to recover from four to six grains without much difficulty. Do not forget the possibility of a relapse from fresh absorption of poison. Always empty the bladder if necessary by catheter before leaving patient. Death may ensue from secondary symptoms, such as exhaustion, bronchitis, or heart failure.

*Treatment.*—1. If taken by mouth, use **stomach=tube**, or give an **emetic** of mustard (a table-spoonful or more in water), or of ipecacuanha (forty grains in water), or of sulphate of zinc (twenty grains or more in water), or a hypodermic injection of gr.  $\frac{1}{16}$  of **apomorphine**

may be given (10 minims of the one per cent. solution). Wash out the stomach thoroughly. In morphine poisoning, vomiting is induced with difficulty. If morphine taken hypodermically, the use of the stomach-tube would still be desirable.

2. Give ten grains of permanganate of potassium dissolved in a pint of tepid water and repeat dose in half an hour. The dose of Condry's fluid is an ounce and a half in a pint of water. Morphine even when given hypodermically is partly eliminated by mucous membrane of stomach, so from time to time wash it out with tepid water to which a grain or two of the permanganate have been added. If the patient is insensible the stomach-tube must be used.

3. Keep the patient walking about, flap him with a wet towel, shout at him, and rouse him by every means in your power. Apply **battery** sharply to the limbs. **Ammonia** or sal volatile to the nose.

4. Inject a pint of hot strong **coffee** into the bowel, with stomach-pump, or enema apparatus.

5. Pour a large jug of **hot** and **cold water** alternately over his head from a height, and repeat it frequently, drying him in the in-



tervals. Be cautious in use of cold effusions if collapse, or when the skin is cold.

6. If signs of failure of respiration, give a hypodermic injection of gr.  $\frac{1}{20}$  of sulphate of **atropine** (5 minims of the I in 100 solution), repeating it in a quarter of an hour if necessary. Atropine is a true physiological antidote to morphine, and gr.  $\frac{1}{20}$  of atropine should be used for every grain of morphine taken. Another plan is to give from gr.  $\frac{1}{4}$  to  $\frac{1}{2}$  of atropine, repeating it in two hours if necessary. If atropine not at hand, give a hypodermic injection of thirty minims of tincture of belladonna.

7. **Artificial respiration** to be kept up steadily for at least two hours. Inhalations of oxygen. Empty the bladder before leaving the patient, or some of the poison may be re-absorbed.

*Tests.*—If the alkaloid is heated on a watch-glass with a drop of strong sulphuric acid until the acid begins to fume and the mixture is then allowed to get quite cold, a drop of nitric acid produces a brilliant red colour. Ferric chloride produces a blue coloration. If to a solution containing morphine a solution of iodic acid is added, a yellow or brown colour is produced. The last test is very delicate, and  $\frac{1}{25000}$  grain of

morphine may be detected, but it requires great care and is reliable only in the hands of an expert.

See also MORPHINE (Chronic Poisoning).

### MOTHER'S FRIEND.

This is a "soothing syrup" extensively used in some parts of the country. It is eminently adapted for increasing the infant mortality of the neighbourhood. Eight or ten drops usually answer the purpose, the child dying speedily with all the symptoms of opium poisoning. The jury generally return a verdict of accidental death, and mildly censure the chemist or patent-medicine vendor from whom it was bought. It is said on good authority that 15,000 children are killed every year by soothing syrups and other similar preparations.

### MUSHROOMS—POISONOUS FUNGI.

Cases of mushroom poisoning fall into two categories:—

I. Those due to fungi which contain intrinsic toxic principles.

II. Those due to fungi which contain no

intrinsic toxic principle, but have undergone decomposition with the production of ptomaines.

The first are the true poisonous fungi, whilst the second are edible fungi which have undergone a change analogous to that met with in cases of meat poisoning. Group I. must be divided into two classes :—

1. Of which *Agaricus phalloides* (*Amanita phalloides*) is the type and Phallin is the active principle.

2. Of which *Agaricus muscarius* (*Amanita muscaria*) is the type and Muscarine is the active principle.

The Phallin of Kobert is a vegetable toxalbumin found not only in *Agaricus phalloides*, but in *A. mappa*, *verna*, *recutita*, and *porphyria*. It is a blood poison which even in a  $\frac{1}{250000}$  dilution produces hæmoglobinuria, disintegrating the red corpuscles, liberating fibrin-ferment and producing thrombi and formation of multiple ecchymoses. Moreover, it has a phosphorous action, and produces fatty degeneration of the liver with symptoms similar to those of acute atrophy of the liver.

Muscarine is the active principle of the *Agaricus muscarius*, of the *Agaricus pantherinus* and of the *Boletus luridus*. It is an alkaloid, and forms salts with acid. It is analogous in

action to pilocarpine, and is antagonized by atropine. It produces salivation, nausea, vomiting, purging, shortness of breath, and slowness of the heart's action. The *Agaricus muscarius* or fly fungus is one of the most beautiful of the *Agaricini*. It is usually bright red with yellow spots. Not plentiful in England, but abundant in the Highlands. Used in Siberia and Kamschatka to produce intoxication; the urine being drunk over and over again.

*How taken.*—Mistaken for edible varieties, or taken in ignorance of poisonous properties.

*Symptoms.*—Differ according to the particular variety taken, sometimes chiefly gastro-enteric, at others neurotic. Usually appear in from half an hour to an hour, but gastro-intestinal symptoms may be delayed for six or eight hours, or more. Violent colic with thirst, vomiting and diarrhœa. Great mental excitement followed by coma, muscular twitchings, general convulsions, or tetanic spasms. Pulse slow, breathing stertorous, pupils dilated or unchanged; extremities cold. Death from action on heart.

*Fatal dose.*—Difficult to say; a very small quantity may kill. Death often rapid, but possibly not for some days.

As there would probably be a difficulty on the

spur of the moment in distinguishing between different kinds of poisonous fungi it would be wise to adopt following treatment :—

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard (a table-spoonful in water), or of sulphate of zinc (a scruple in water), or of ipecacuanha (a scruple of the powder in water).

2. **Atropine.** Give twenty drops of tincture of belladonna in water, or better, a hypodermic injection of gr.  $\frac{1}{50}$  of **atropine** (2 minims of the B.P. solution), to be repeated in half an hour if necessary. This is the specific antidote in the muscarine type.

3. **Castor oil.** Give an ounce of castor oil to clear out the intestines.

4. **Stimulants.** Give stimulants such as brandy, spirit of ether, spirit of chloroform, or sal volatile.

5. **Warmth** to extremities and poultices to abdomen.

It must be remembered that mushrooms disagree with many people, and there may be disturbance of the stomach and bowels after eating a perfectly harmless variety. They are more likely to induce disagreeable symptoms if badly cooked. It is always dangerous to warm up a dish containing mushrooms.

## MUSSEL POISONING.

Cases of poisoning from eating mussels not at all uncommon. May have been gathered from ship's bottom in dock, and may be contaminated with copper from the sheathing or with arsenic from the paint.

*Symptoms.*—Uneasiness and weight at pit of the stomach, sensation of numbness in the extremities, heat, dryness, and constriction in mouth and throat, thirst, shivering, difficulty of breathing, cramps in the legs, swelling and inflammation of the eyes. colic, vomiting and purging, itching of the skin, urticaria, failure of heart's action, collapse, death.

*Treatment.*—1. **Emetic** of apomorphine hypodermically, or sulphate of zinc, mustard or ipecacuanha by mouth.

2 **Castor oil.** An ounce at once to clear out the intestines.

3. **Stimulants.** To be given very freely, brandy, whiskey, champagne, sal volatile, spirits of chloroform, spirit of ether. Hot-water bottles to feet. Warm blankets. Rubbing limbs with brandy.

5. **Atropine.** Hypodermic injection of gr.  $\frac{1}{50}$

of sulphate of atropine, with, if much pain, gr.  $\frac{1}{2}$  of morphine.

### NEPENTHE.

Is said to consist of purified extract of opium, citrate of morphia, and grape-sugar mixed with sherry. It is probably of about the same medicinal strength as laudanum. For treatment, see OPIUM.

### NEURALINE.

An application for the cure of neuralgia; consists of tincture of aconite with chloroform and rose water. Said to contain about one drop and a half of Fleming's tincture in each bottle. For treatment, see ACONITE.

### NICOTINE.

An alkaloid obtained from tobacco. Like conine it is a liquid alkaloid. One of the most deadly poisons known, causing death in three minutes. Murder in one case, suicide in another. Fatal dose not determined. For treatment, see TOBACCO.

## NIGHTSHADE.

There are several plants known as Nightshade.

1. The Woody Nightshade or Bitter Sweet, or *Dulcamara* (*Solanum dulcamara*), has purple flowers and red berries.

2. The Black or Garden Nightshade (*Solanum nigrum*) has white flowers and black berries.

3. The Deadly Nightshade or Dwale, or Belladonna (*Atropa belladonna*), has dingy flowers, berries the size of a cherry, marked with deep centre furrow, shining black when ripe.

For treatment, see BELLADONNA.

NITRATE OF POTASSIUM--NITRE—  
SALTPETRE.

*How taken.*—Usually accidentally, mistaken for Epsom salts, or sulphate of sodium.

*Symptoms.*—Severe burning pain in abdomen, nausea and vomiting, sometimes purging, coldness in the limbs, partial paralysis, tremors, convulsions, collapse.



*Fatal dose.*—One ounce may prove fatal, but may recover from two.

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard, sulphate of zinc, or ipccacuanha powder.

2. **Mucilaginous drinks**, white of egg and water, linseed tea, olive oil, &c.

3. **Stimulants**, if much collapse, five drops of essence of camphor on sugar, or brandy and hot water freely. Brandy and water to be injected into rectum; or under skin if power of swallowing is lost.

4. **Warmth.** Patient to be wrapped in hot blankets, hot water to feet, limbs to be kept warm by rubbing. Recumbent position to be strictly maintained.

5. **Atropine.** Hypodermic injection of atropine if signs of heart failure.

## NITRATE OF SILVER—LUNAR CAUSTIC.

Portions of stick may be swallowed in making applications to throat.

*Symptoms.*—Sometimes whitish flaky matter is vomited, which turns black on exposure to the air.

*Treatment.*—1. **Common salt**, dissolved in water or milk, should be given freely.

2. An **emetic** of mustard (a table-spoonful of the powder in water), or of sulphate of zinc (twenty grains in water), or of ipecacuanha (a scruple of the powder in water).

3. **White of egg**, barley water, arrowroot.

### NITRIC ACID—AQUA FORTIS.

*How taken.*—Accident or suicide. In one case acid was poured into a child's mouth; in another, into the ear whilst asleep. When a patient has a suicidal tendency, take care not to leave the nitric acid bottle about, after testing urine. Fumes dangerous when inhaled.

*Symptoms* come on immediately with intense burning pain in the throat and gullet extending to the stomach. Violent vomiting; the vomited matter consisting of food mixed with altered blood—brown in colour—and shreds of membrane stained yellow. It has an acid reaction and a characteristic odour. The mucous membrane of the mouth is soft and white, or may be yellow or even brown. There is great difficulty in speaking, and the

power of swallowing may be entirely lost. There is great pain in the abdomen, breathing is carried on with difficulty, the pulse is small, frequent and irregular, the surface is cold, and there may be rigors. There will probably be constipation and perhaps suppression of urine.

*Fatal dose.*—Recovery after taking half an ounce, but two drachms might prove fatal.

*Treatment.*—1. Large draughts of **soap and water** to be taken at once. **Carbonate of potassium.** Carbonate of sodium, **ammonia**, sal volatile or **common washing soda**, to be taken freely, well diluted with water. Magnesia or **lime=water** may be used if at hand.

2. Milk, oil, thick gruel, white of egg and water, gum and water, and linseed tea, are all useful.

3. **Morphine.** A hypodermic injection of half a grain to ward off shock.

As a rule the stomach-pump cannot be employed with safety. Gastro-enterostomy may be considered. If larynx involved, **tracheostomy**. Stricture of the œsophagus may occur as a secondary result.

## NITRITE OF AMYL.

Usually taken by angina pectoris patients in mistake for cough linctus or some other medicine. A patient of mine took a teaspoonful, vomited in a few minutes and seemed none the worse for it. In another case a patient took four drachms and recovered. I know of no fatal case.

*Treatment.*—1. **Emetic** of mustard, or sulphate of zinc.

2. **Fresh Air.** All windows and doors to be thrown wide open, and the patient fanned.

3. The **recumbent position** should be maintained.

4. **Artificial respiration** if necessary.

## NITRITE OF SODIUM.

Used in treatment of epilepsy, angina pectoris and other diseases. Allied in general action to nitrite of amyl and nitro-glycerine. Substance sold as nitrite of sodium often largely adulterated with the inert nitrate. Nitrite sometimes recommended in twenty-grain dose, but too much; two or three grains enough if drug pure.

*Symptoms.*—Patient complained of “feeling giddy,” “took all her strength away,” was afraid she would “go off insensible”; blueness of face, lips and hands; throbbing all over body. Feeling of anxiety with prostration, nausea and vomiting.

*Fatal dose.*—No fatal case on record.

*Treatment.*—1. **Emetic** of mustard, ipecacuanha, or sulphate of zinc.

2. **Fresh air.** Windows and doors to be thrown wide open and the patient fanned.

3. **Recumbent position** to be maintained.

4. **Ergot.** A drachm of liquid extract by mouth, or 10 minims of the *Injectio Ergotæ Hypodermica* under the skin.

5. **Atropine.** Hypodermic injection of gr.  $\frac{1}{60}$  of sulphate of atropine.

6. **Artificial respiration** if necessary.

NITRO-BENZIN — NITRO-BENZOL — ARTIFICIAL OIL OF BITTER ALMONDS—  
ESSENCE OF MIRBANE.

This is a pale yellow oily liquid having an odour resembling that of bitter almonds. It burns with a smoky flame.

*How taken.*—Workers in aniline dyes exposed to danger from handling it. Accidents from sucking syphons decanting it; the breaking of large carboys. Sometimes added to liqueurs or sweet-meats for the sake of its odour. Pomades sometimes scented with nitro-benzin. In one case, eighteen people poisoned by mistaking a flask of nitro-benzin for a cordial. May kill when taken in the gaseous form. In manufacture of "Sicherheit," a German patent explosive intended for blasting purposes in coal-mines, symptoms experienced closely resembling symptoms following inhalation of nitro-benzin. "Roburite," another explosive, acts much in the same way. The inhalation of the fumes of this substance is very dangerous; and in one case, where it was sprinkled on the floor of a bedroom to kill cockroaches, the patient had a narrow escape.

*Symptoms* may be curiously delayed, even, it is said, for a day or two. Weariness, discomfort, nausea and a peculiar benumbing of the head. Great anxiety, want of breath, confusion of mind. Cyanosis often very marked, nails, tongue, lips, and mouth nearly black. May be convulsions, sometimes like tetanus.

Pupils dilated, though they generally act a little to light. Death by asphyxia.

*Fatal dose.*—From merely tasting it; eight or nine drops, perhaps.

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha.

2. **Stimulants**, such as brandy, liquor ammoniæ (half a drachm in water), or chloric ether (a drachm in water), frequently repeated. If patient cannot swallow, to be given as enema, or brandy may be injected under skin. Inhalations of ammonia on pocket-handkerchief.

3. **Douche.** Alternate hot and cold douche, the water being poured over the chest from a height.

4. **Atropine.** Hypodermic injection of gr.  $\frac{1}{60}$  of atropine, or thirty drops of tincture of belladonna.

5. **Artificial respiration** to be maintained till the patient has recovered, or no further pulsation can be detected at the heart. Inhalation of oxygen.

6. **Battery.** Mild interrupted current to chest walls, and over region of the heart.

*Tests.*—It is converted into aniline by zinc and sulphuric acid. It is unchanged by sulphuric acid, a distinction from oil of bitter

almonds, which becomes crimson on the addition of this acid.

### NITRO-GLYCERINE.

*How taken.*—Mistaken for beer. Mixed with gunpowder and taken for cure of boils. Used for blasting purposes, and as a remedy for angina pectoris, neuralgia and other complaints. Medicinally a one per cent. solution most commonly employed, but the five per cent. solution is often kept by chemists.

*Symptoms.*—Headache, throbbing increased by movement. Pulsation all over the body, even to tips of the fingers. Arterial relaxation, the pulse tracings showing marked dirotism. Slight flushing of the face. Mental confusion. Depression and feeling of anxiety. Nausea, sometimes even vomiting. Collapse, the patient falling down suddenly.

*Fatal dose.*—No case on record from taking the one per cent. solution. Two mouthfuls of the crude drug fatal to an adult male.

*Treatment.*—1. **Recumbent position** to be strictly maintained.

2. **Cold water** cloths or ice to be applied to head,



3. **Ergot.** A drachm of liquid extract of ergot by mouth, or a grain of ergotin (three minims of the *Injectio Ergotinæ Hypodermica*) injected subcutaneously, and repeated in a quarter of an hour.

4. **Atropine.** A hypodermic injection of gr.  $\frac{1}{50}$  of sulphate of atropine, or thirty drops of tincture of belladonna by mouth.

Belladonna is useful in the headache caused by nitro-glycerine.

## NITROUS OXIDE GAS—LAUGHING GAS.

A safe anæsthetic for short operations such as extraction of teeth. Very few deaths, and these chiefly from the gag or a tooth causing suffocation.

*Treatment.*—1. Pull the **tongue** well forward and see that the mouth is clear. See that there is no obstruction by artificial teeth. See that your gag is all right; if missing turn your patient upside down and slap his back.

2. **Artificial respiration** to be commenced at once, and kept up for two hours if necessary, not faster than eighteen in the minute.

3. **Fresh air.** Loosen everything about the chest and neck. Open the doors and windows wide and fan the patient. Alternate hot and cold **douche** to chest and head.

4. **Oxygen.** Inhalation of compressed oxygen gas.

### NOVOCAINE.

A local anæsthetic used chiefly as a spinal anæsthetic, especially in gynæcological operations. Dose for injections, one and a half to two grains. If untoward symptoms, see provisionally COCAINE and STOVAINE.

### NUTMEG.

A remedy for diarrhœa. In common use to procure abortion.

*Symptoms.*—Patient stupid, giddy and drowsy. Marked restlessness. Delirium lasting for twenty-four hours. Great thirst. Tightness in the chest. Vomiting. Pupils dilated.

*Dose.*—Recovery after taking five nutmegs powdered and mixed with sugar. No effect on pregnancy.

*Treatment.*—Emetics. Purgatives. Coffee and stimulants.

## NUX VOMICA.

*(Strychnos Nux Vomica.)*

Sometimes known as Rats' Bane. Seeds called by the Germans "Crow's Eyes." The seeds weigh about thirty grains—enough to cause death.

*How taken.*—Powder easily procured, used as a vermin-killer. Extract taken by mistake. Suicide.

*Symptoms.*—See STRYCHNINE.

*Fatal dose.*—Half a drachm of the powder or three grains of the extract.

*Treatment.*—1. **Stomach=pump**, or stomach-syphon, if available at once, for after tetanic symptoms have set in the introduction of the tube would excite a paroxysm.

2. **Emetic** of sulphate of zinc, mustard, or ipecacuanha. Should a difficulty be experienced in opening the jaw, put the patient under chloroform, or ether, or give a hypodermic injection of gr.  $\frac{1}{10}$  of apomorphine.

3. **Animal charcoal**, *ad libitum*, or tannic acid, or tincture of iodine. To be followed by another emetic.

4. **Bromide of potassium** (half an ounce) in bad cases, with chloral (thirty grains), to be

followed by the bromide (in two-draehm doses) with or without chloral (ten grains) every fifteen or twenty minutes as long as necessary.

5. **Chloroform** or **ether** to the extent of producing muscular relaxation.

6. **Curare.** A hypodermic injection of gr.  $\frac{1}{2}$  (6 minims of a 1 in 12 solution) may be given.

7. **Artificial respiration** if possible.

*Tests.*—The tests for strychnine may be utilized. Brucine gives a red coloration with nitric acid.

## OIL OF VITRIOL.

See SULPHURIC ACID.

## OPIUM.

*How taken.*—Any of the official preparations of opium might be taken, of which the following are most commonly used :—

Tinctura opii (Laudanum), one grain in fifteen minims, but of variable strength.

Tinctura Camphoræ Composita (Paregoric or Paregoric Elixir), grain in half an ounce.

Tinctura opii Ammoniata (Scotch Paregoric), five grains in ounce.

Extractum opii, about double the strength of opium.

Extractum opii liquidum,  $\frac{3}{4}$  grain of morphine in 100 minims.

Linimentum opii, equal parts of tincture of opium and soap liniment.

Opium wine, now rarely used, contains twenty-two grains to the ounce, whilst opium lozenges contain a fifth of a grain in each.

Syrup of Poppies was formerly made from poppy capsules, but is now usually a mixture of laudanum and syrup of variable strength.

Other preparations sometimes used are :—

Black Drop, four times the strength of the tincture.

Battley's solution, fifty per cent. stronger than the tincture.

Nepenthe, about the same strength as the tincture.

Godfrey's Cordial, from half to one and a half grains of opium to the ounce.

Dalby's Carminative, two and a half minims of laudanum to the ounce.

Atkinson's Infant Preserver, three minims of laudanum to the ounce.

Many of these are not constant in strength or composition.

Children often poisoned by infusions or decoctions of the leaves, seeds, or capsules of the poppy given to induce sleep. Cases of accidental poisoning from eating blossoms and fruit of the red poppy. Very commonly employed for suicidal purposes, also for murder. Cases of poisoning from use of opium in enemata and suppositories and from use of laudanum on poultices.

*Symptoms.*—Type of all simple narcotic poisons. A preliminary stage of mental excitement of an agreeable nature with acceleration of the heart's action. Soon replaced by headache, weariness, a sensation of weight in the limbs, incapacity for exertion, sleepiness, diminution of sensibility and contraction of the pupils. At first the patient can be roused with difficulty, but after a time it is impossible to make the slightest impression on him, reflex action ceases, the eyes are half shut, the pupils fail to respond to light, the muscles are relaxed, the lower jaw falls, the skin is cold to the touch, and the face and lips are either pale or cyanotic. Respiration soon gets slow, irregular and stertorous, or may be of Cheyne-Stokes type; the pulse is weak and compressible, and death ensues usually in from six to twelve hours.

*Diagnosis.*—Opium poisoning may be mistaken for acute alcoholism. The history of the case, the odour of the breath or of the vomited matter, and the presence of either alcohol or morphine in the urine are the chief points to which to attend. It must not be forgotten that a man who has been drinking may poison himself with opium, and opium is not unfrequently taken in porter. In profound drunkenness the pupils are usually dilated. To distinguish opium poisoning from apoplexy, look for paralysis of limbs or facial muscles, examine the condition of the heart and blood-vessels, and see if the pupils are equal. Especially apt to be mistaken for hæmorrhage into the pons. Distinguish from poisoning by chloroform and ether by smell in breath or in vomited matters. To distinguish from uræmic poisoning, history of case, condition of pupils, examination of urine. Cases of acetonæmia or diabetic coma sometimes mistaken for opium poisoning.

*Fatal dose.*—Two and a half grains of extract, equal to five grains of opium, fatal. In one case death from a drachm of laudanum. Recovery from much larger doses, even from four or five ounces of the tincture; in one case from eight ounces. Children very susceptible to opium; one

drop of laudanum has proved fatal. In all cases the more strongly the pupils are contracted the worse the prognosis. Early vomiting is a good sign and the occurrence of copious sweating is favourable.

*Treatment.*—1. **Permanganate of potassium**, ten grains dissolved in a pint of water and repeat the dose in half an hour. Six grains of the permanganate will neutralize one ounce of laudanum. It is a good plan to add to the antidote two teaspoonfuls of acetic acid or white vinegar so as to convert the morphine into a soluble salt. If Condyl's fluid is used, give an ounce and a half in a pint of water.

2. **Stomach=tube** or **Emetic** of mustard (a table-spoonful of the powder in water), or of sulphate of zinc (twenty grains in water), or of ipecacuanha (a scruple of the powder in water). **Apomorphine**, a hypodermic injection of 10 minims of the one per cent. solution.

3. **Rousing.** Keep the patient walking about, flap him with a wet towel, shout at him, pinch him, and rouse him by every means in your power. Apply the battery to the limbs sharply. This treatment, although generally recommended, must not be too prolonged or it will hasten heart failure. **Ammonia** or sal



volatile to the nostrils. Do not give wine or brandy and do not drag about a patient who is in a state of collapse.

4. **Coffee.** A pint of hot strong coffee injected into the bowel.

5. **Douche.** Pour a jug of cold water and of hot water alternately over his head from a height, and repeat it frequently, drying him in the intervals. Be cautious not to increase collapse from too much cold water. Avoid using the cold douche when the surface is cold.

6. **Atropine.** Give a hypodermic injection of gr.  $\frac{1}{20}$  of sulphate of atropine, if signs of failure of respiration. If atropine not at hand, give thirty minims of tincture of belladonna hypodermically or by mouth, and repeat in a quarter of an hour. A dose of gr.  $\frac{1}{20}$  of atropine would probably antagonize from two to three drachms of laudanum, but it would be safer to repeat the dose.

7. **Artificial respiration** should be kept up for at least two hours if necessary, and inhalations of oxygen will be found useful. Strychnine hypodermically may be found useful in threatened respiratory failure.

*Tests.*—See tests for morphine. Meconic acid is sometimes more easily detected than morphine

and indications of its presence are considered sufficient. To detect meconic acid in urine precipitate with lead acetate, filter and wash precipitate, decompose with dilute sulphuric, filter and neutralize and then test for meconic acid with ferric chloride, which gives a red coloration not destroyed by dilute mineral acids or solution of corrosive sublimate. This test requires care.

See also OPIUM (Chronic Poisoning).

### OPIUM AND BELLADONNA.

*How taken.*—Suicide ; liniment by mistake.

*Symptoms.*—Will depend on relative proportion of drugs taken. As they are to some extent antagonistic, symptoms may be slight. Said that gr.  $\frac{1}{20}$  atropine will antagonize gr. i. morphine. Probably more danger from the opium than the belladonna, especially in children.

*Treatment.*—1. **Stomach=pump** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha. Hypodermic injection of apomorphine, 10 minims of the one per cent. solution.

2. **Coffee.** An enema of a pint of hot strong coffee.

3. **Rousing.** The patient should be kept awake. Flicking with a wet towel, and mustard to the calves of the legs and over the region of the heart will be found useful. Alternate hot and cold douche over head and chest.

4. **Artificial respiration** if necessary.

### OXALIC ACID.

In prismatic crystals resembling and liable to be mistaken for sulphate of magnesium or sulphate of zinc. Usually sold at a penny the ounce. It has a strong acid reaction and is freely soluble in water. If pure, burns away on heating without blackening.

*How taken.*—Commonly used for cleaning straw hats, by dyers and calico-printers for bleaching purposes, by curriers and harness-makers for cleaning leather, by marble masons for removing iron stains, for whitening floor boards and for taking out iron-mould from linen. Easily obtainable without inconvenient enquiries. Sometimes mistaken for Epsom salts, but usually taken with suicidal purposes by pregnant house-maids. Popularly supposed to be an abortifacient, but inefficacious for this purpose. Has of late increased in popularity as a suicidal agent.

Oxalic acid itself may be used or salt of sorrel, which is a binoxalate of potassium.

*Symptoms.* — Nothing pathognomonic — but often prompt collapse. May be almost instant death. Burning in the throat, burning pain in stomach, cramp in legs, vomiting of dark-coloured fluid containing altered blood. Feeling of constriction in the throat with hacking cough. Collapse, imperceptible pulse, excessive languor. Purging. Mouth sore and usually white. May be tetanus or coma. Death in acute cases in from fifteen minutes to half an hour. In more chronic cases may be perforation of the stomach. In prolonged cases albumin in the urine.

*Fatal dose.* — Death from a drachm in a boy of sixteen; recovery from an ounce and a quarter with prompt treatment.

*Treatment.* — 1. **Chalk**, lime, or whitening, given freely in water. The whitewash from a wall, or fence, or ceiling, may be used. Lime-water is an antidote, but the saccharated solution, being stronger, is preferable. It should be given in drachm doses frequently repeated.

2. **Castor oil.** An ounce of castor oil should be given to clear out the intestines or an emetic may be administered.

The administration of potash, soda, ammo-

nia, or of carbonate of potassium, sodium or ammonium, to be avoided.

*Tests.*—Best separated from organic mixtures by dialysis. Is precipitated by lime salts, the calcium oxalate being recognized by its characteristic octahedral crystals. Dilute sulphuric acid with dioxide of manganese gives effervescence in the cold. Examine urine and vomited matter for crystals of oxalate of lime, which may be in octahedra or dumb-bell crystals.

### PARAFFIN OIL—PETROLEUM.

Petroleum occurs native in many parts of America, and is usually obtained by sinking wells. It is often imported as *rock oil*. Paraffin oil, also known as *kerosene*, *mineral oil*, &c., is obtained from petroleum by distillation. Benzolin, mineral naphtha, petroleum spirit or petrol is a mixture of the lighter series of hydrocarbons. Vaseline, adepsine, chrisma, ozokerine, fossiline and paroline are petroleum products.

Several times mistaken for ginger-beer. Recovery after swallowing a pint of petroleum.

Recovery after taking half a pint of paraffin on an empty stomach.

*Symptoms* vary much. Intense burning sensation in mouth, œsophagus, and stomach; excreta covered with layer of petroleum presenting aspect of continuous grease spots. Surface of body and extremities cold, face pale and anxious, pulse feeble but regular, and the respiration is sighing. Insatiable thirst and restlessness at night. Often coma.

*Diagnosis* easy from smell of breath and vomited matters. Prognosis good.

*Treatment*.—1. **Stomach=pump** or **Emetic**. Stimulants freely. Warmth to extremities.

### PARALDEHYDE.

A colourless fluid recommended as a substitute for chloral. Serious symptoms from one drachm, but recovery from three and a half ounces.

*Symptoms*.—Odour of drug in the breath and in the urine, pupils contracted and insensitive to light, dyspnœa, unconsciousness, collapse, skin warm, pulse rapid.

*Treatment*.—As for chloral. Unconsciousness may persist for over thirty hours.

Cases of chronic paraldehyde poisoning are met with. Chief symptoms are anæmia, emaciation, rise of evening temperature, palpitation, muscular weakness with tremor of the tongue, facial muscles and hands, insomnia, hallucinations of sight and delusions.

### PHENACETIN.

This drug is largely employed both as an antipyretic and as an analgesic, and with equally good results. It is usually given in doses of from five to ten grains. If used with care it has a remarkable freedom from injurious action. It is allied in general action to antipyrin and antifebrin. Doses of fifteen grains may be followed by vertigo, shivering, general malaise and somnolence. In one case after two fifteen-grain doses the symptoms noticed were vomiting, great weakness, and jaundice. The urine was thick and dark reddish-brown in colour, and the patient died on the second day.

### PHENAZONE.

See ANTIPYRIN

## PHOSPHORUS.

*How taken.*—As phosphorus paste (rat poison), or more rarely as phosphorus oil, phosphoric ether, or pure phosphorus. Only the white phosphorus is poisonous, the red being inert, even in very large doses. Matches commonly sucked for suicidal purposes, and cause of many accidents in children. Phosphorus acts powerfully when administered in a finely divided state as in the form of rat-paste or lucifer matches. Chronic poisoning in manufacture of matches. Enough phosphorus paste to cause death may be purchased at an oilman's for one penny, and no questions will be asked.

*Symptoms.*—Taste of garlic in the mouth. Pain in stomach. Eructation of phosphorus vapours. Intense thirst. Vomiting, but usually not persistent, vomited matters may be luminous in the dark. Odour of phosphorus may be perceptible in the breath. May be partial recovery, then jaundice with urticaria. Pain in region of liver, which is found to be enlarged. Considerable general disturbance, with weakness of heart's action. Tendency to hæmorrhage, there being bleeding from the nose, and in women from the vagina, vomiting



of blood, and blood-stained motions. May be petechiæ or even extensive ecchymoses. The menses may appear. Failure of intellect, coma, and in some cases violent, noisy delirium. Convulsions not uncommon, terminating in coma. Urine diminished in quantity, albuminous. Death may occur from collapse suddenly and unexpectedly. If recovery, convalescence much protracted.

*Fatal dose.*—Difficult to say. If taken in solid form probably not very fatal, much more likely to cause death if finely divided, or taken in solution. Death may ensue after five or six days. Recovery after sucking three hundred matches.

*Treatment.*—1. **Sulphate of copper** in three-grain doses dissolved in water, every five minutes till vomiting is induced. Continue the sulphate of copper in grain doses every quarter of an hour, giving with it ten drops of acetate of morphine, if rejected. Mucilaginous drinks are useful.

2. **Sanitas** freely. Half-drachm doses of old unrectified French oil of turpentine every half-hour. Useful, but difficult to obtain. Wash out stomach with 1 per cent. permanganate of potassium.

3. A **purgative** of half an ounce of Epsom salts.

Oils and fats should not be given, as they act as solvents and facilitate the absorption of the phosphorus.

#### PHYSOSTIGMA—CALABAR BEAN—THE ORDEAL BEAN OF WESTERN AFRICA.

*How taken.*—Beans left about and eaten by children.

*Symptoms.*—Giddiness, faintness, prostration, loss of power in the lower extremities. Muscular twitching. Contracted pupils. Mind clear to the last. Death from asphyxia.

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha. Apomorphine (10 minims of the 1 in 100 solution hypodermically) may be used as an emetic.

2. Dissolve ten grains of permanganate of potassium in a pint of tepid water and introduce by stomach-tube, repeating the dose in half an hour.

3. **Atropine.** A hypodermic injection of gr.  $\frac{1}{60}$  of sulphate of atropine, or fifteen drops of the tincture of belladonna by mouth or rectum. To

be repeated every quarter of an hour for an hour, or until the pupils dilate, or the pulse is quickened. The exhibition of the antidote should be persevered with in repeated doses until the pupils are fully dilated, the pulse-rate increased, and until the hyper-secretion of bronchial mucus, which greatly impedes respiration, is checked.

4. **Chloral.** Should the above fail, give ten grains of hydrate of chloral by mouth or rectum every quarter of an hour.

5. **Strychnine.** In bad cases, a hypodermic injection of gr.  $\frac{1}{12}$  of strychnine, or 20 minims of tincture of nux vomica.

6. **Stimulants** freely ; brandy, chloric ether, sal volatile. Artificial respiration.

## PICROTOXIN.

The active principle of *COCCULUS INDICUS*.

*How taken.*—Used as a fish poison, to adulterate beer, and as a medicine. Sometimes employed to “hocuss” people for commission of crimes. Said to be active principle of “Barber’s Poisoned Wheat” for killing birds.

*Symptoms.* — Nausea, vomiting, muscular

debility, somnolence and sometimes convulsions. Scarlatinal eruption in some cases.

*Fatal dose.*—Not known, a rare poison. Probably two or three grains would be a poisonous dose. Ordinary medical dose for checking night-sweating of phthisis is gr.  $\frac{1}{60}$ .

*Treatment.*—1. **Stomach-pump** or **Emetic** of sulphate of zinc, mustard, or ipecacuanha.

2. **Chloral.** Twenty grains in water, with ten grains more in a quarter of an hour, if necessary.

3. **Bromide of Potassium.** If tetanus, may be given in two-drachm doses every quarter of an hour, in addition to the chloral.

## PILOCARPINE.

*Treatment.*—**Atropine.** The hypodermic injection of gr.  $\frac{1}{60}$  of atropine will at once arrest the symptoms. Thirty minims of tincture of belladonna by mouth will succeed almost as well.

## PITURA.

(*Duboisia Hopwoodii.*)

A stimulating narcotic used by the natives of New South Wales. Allied in action to tobacco.

*How taken.*—Eye lotion taken by mistake.

*Symptoms.*—It is slightly narcotic; first salivates, then dries the mouth; is a powerful respiratory poison; produces general weakness, violent twitchings of the whole body and severe headache.

*Treatment.*—See ATROPINE.

## POTASH.

Taken in form of caustic potash or solution of potash, usually by accident. An impure carbonate is often sold under name of “potash” for cleaning lamps, &c. Pearlash is also used for washing purposes.

*Symptoms.*—Whilst swallowing an acrid caustic taste. Mucous membrane of mouth partly destroyed. Heat and burning in the throat extending down to the stomach. Sometimes vomiting, the vomited matter being mixed with dark brown blood and shreds of mucous membrane. Skin cold and clammy. Purging with great pain in abdomen. May get stricture of œsophagus as a secondary result.

*Treatment.*—1. Give water freely, with **vinegar, acetic acid**, citric acid, **lemon juice**, or orange juice.

2. **Demulcent drinks**, such as white of egg and water, milk, gruel, and barley water. Olive oil.

### PRIMULA.

Some species of *Primula* are poisonous. Many people after handling the leaves of the *Primula obconica* suffer from acute dermatitis which assumes an erysipelatous character. The face swells and large blisters form on the cheeks and chin. The symptoms soon subside and call for but little treatment, with the exception of a simple lotion or ointment.

### PRIVET.

(*Ligustrum vulgare.*)

*How taken.*—Berries eaten by children. Leaves and shoots poisonous.

*Symptoms.*—Vomiting, purging, drowsiness and convulsions. It is said it may excite the menstrual flow, but I do not get this effect clinically from the administration of a strong tincture even in large doses frequently repeated.

*Treatment.*—Copious draughts of hot water

to facilitate vomiting, stimulants, friction to limbs, hot bottles to extremities and a hypodermic injection of morphine.

### RAT-PASTES.

The ordinary phosphorus rat-paste is composed of phosphorus, fat, sugar and Prussian blue, the last-named being added for colouring purposes. A penny pot usually contains about four grains, or enough to kill at all events two people. A sixpenny pot would suffice for a whole family.

Sampson's rat-paste is said to contain arsenic as the active ingredient. Roth and Ringcisen's is composed of phosphorus and arsenic.

### RED PRECIPITATE—RED OXIDE OF MERCURY.

*How taken.*—An active poison, but seldom used for criminal purposes.

*Symptoms.*—Pains and cramps in lower extremities, vomiting, skin cold and clammy. After some days, gums may be affected.

*Treatment.*—1. **Stomach=pump** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha.

2. **White of egg** and water in unlimited quantities. Flour and water, arrowroot, gruel, barley-water or linseed tea.

3. **Stimulants**, brandy, chloric ether, sal volatile.

### RESORCIN.

Also known as resorcinal and metadioxybenzene. Isomeric with hydrochinon. Beautiful white feathery crystals, having very little odour, but a sweet pungent taste. Used as an antiseptic and antipyretic, especially in Germany. One recorded case of poisoning.

*Symptoms.*—Giddiness, “pins and needles” all over. Insensibility, profuse perspiration from head to foot, lips blanched, tongue dry, pupils normal, conjunctivæ insensitive to touch, teeth clenched. Temperature low,  $94.8^{\circ}$  F. Urine black.

*Fatal dose.*—Above symptoms from two drachms. Recovery with prompt treatment. Two drachms nearly proved fatal.

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha.



**White of egg** and water in large quantities. Wash out the stomach with **soda**, or with **saccharated lime**, mixed with large quantities of tepid water.

2. **Stimulants** freely ; hot brandy and water, chloric ether, and sal volatile. **Warmth** to the extremities. Friction with the warm hand. **Interrupted current.**

3. **Atropine.** Hypodermic injection of gr.  $\frac{1}{50}$  of sulphate of atropine. Inhalations of **nitrite of amyl**.

Large doses of red wine are used in Germany as an antidote.

## SALICYLIC ACID.

Salicylic acid is not usually regarded as a toxic substance. It is largely employed as a preservative for keeping the lighter forms of wine, lager beer, jams, cream and other substances. A firm of wine merchants was charged under the Food and Drugs Act, 1875, with selling orange wine containing  $\cdot 038$  per cent. of salicylic acid, or 26.6 grains to the gallon, but the prosecution was unable to show that it was injurious to health.

## SALTS OF SORREL.

This is an acid oxalate of potassium, and is commonly known as salts of lemon. It is extensively used for straw bleaching and for removing ink stains and iron stains from linen. Half an ounce has proved fatal. For treatment, see OXALIC ACID.

## SAVIN.

To procure abortion, but also for other purposes. Taken as a powder, or the oil may be used.

*Symptoms.*—Pain, vomiting, violent straining at stool, coma or convulsions. Death in a few hours or not for some days.

*Treatment.*—1. **Emetic** of mustard, sulphate of zinc, or ipecacuanha.

2. **Castor oil**, an ounce.

3. Linseed-meal poultices to abdomen.

4 **Morphine.** Hypodermic injection gr.  $\frac{1}{3}$ .

## SCHEELE'S ACID.

This is twice the strength of ordinary prussic acid. For treatment, see PRUSSIC ACID.

## SCHEELE'S GREEN.

This is arsenite of copper. For treatment, see ARSENIC.

## SEWER GAS—CESSPOOL EMANATIONS.

Generally consists of a mixture of sulphuretted hydrogen, sulphide of ammonium and nitrogen, but is sometimes only deoxidized air, with an excess of carbonic acid gas. Fatal cases have occurred from clearing out cesspools, and from the entrance of sewer gas into bedrooms. Bad symptoms often experienced from merely inhaling gas from open gratings in the streets. Cesspools, privies, and sewers, before being cleared out, should be stirred up to permit of escape of contained gas, and should then be thoroughly exposed to the air, and disinfectants freely used before being touched.

*Symptoms.*—If poison concentrated, death may be immediate. If not sufficiently concentrated to cause death at once, the following symptoms may result from a few minutes' exposure:—insensibility, all attempts to restore

consciousness being unavailing, lips livid, conjunctivæ injected, eyes fixed and turned upwards, pupils dilated and insensitive to light. Respiration frequent, even sixty in the minute, pulse rapid, swallowing difficult or impossible. Tonic convulsions from time to time, almost as severe as in tetanus, the temperature rising to  $104^{\circ}$ . Death in twenty-four hours. If sewer gas much diluted, symptoms less severe, consisting only of nausea, diarrhœa, loss of appetite and headache, with a general feeling of malaise.

*Treatment.*—1. Plenty of **fresh pure air**, all doors and windows being open.

2. **Artificial respiration.** Sixteen in the minute; to be kept up by relays of people for many hours. Inhalation of pure oxygen.

3. **Ammonia** to the nostrils. Friction and warmth to the extremities, with brandy if necessary. Interrupted current to the limbs.

4. Stimulants in moderate quantities, hot **brandy and water** or gin and water, for example. To be injected into the rectum if power of swallowing gone.

5. **Coffee.** Injection of a pint of hot strong coffee into the rectum.

6. **Douche.** Hot and cold alternately to

head and chest. **Bleeding** or transfusion might be resorted to. **Catheter** to be used in prolonged cases.

### SIMPSON'S RAT PASTE.

Unlike most Vermin Killers, does not contain strychnine. Said to be composed of starch, malt and arsenious acid (40 per cent.), scented with oil of rhodium. For treatment, see ARSENIC.

### SNAKE-BITE.

In Great Britain and the greater part of Europe the only poisonous snake is the adder, a variety of viper. In India the most destructive species are the cobra, krait, echia, and daboia. Deaths in India from snake-bite estimated at 20,000 a year. Activity of venom differs in character and intensity, in different genera and species. Differs in same individual under varying conditions of temperature, climate, exhaustion, &c. Poison absorbed by mucous membrane, so that sucking wound not altogether unattended with danger.

*Symptoms*.—Intense shock, often little indication of external injury, a slight scratch or

puncture only to be seen. Locally partial paralysis, pain, infiltration, swelling, inflammation and ecchymosis. Depression, faintness, cold sweats, nausea, vomiting, exhaustion, lethargy, loss of consciousness. In cobra poisoning in about fifteen minutes patient seems intoxicated, but answers questions intelligently. Paralysis, first of lower extremities, then of whole body, including tongue and muscles of deglutition. Albuminuria (especially in viperine poisoning), hæmorrhage, relaxation of sphincters, exhaustion, lethargy, convulsions, death. Death from active cobra in an hour.

It must be remembered that all snake poisons are not identical in action.

1. **Ligature.** A ligature—a pocket-handkerchief, or piece of rope, if nothing better at hand—should be tied tightly round the limb between the wound and the heart. Bandage from above downwards. Suck the wound if there is no abrasion of the mouth or gums, and spit out the saliva, taking a little brandy immediately after.

2. **Incision and cauterization.** Make an incision through the bite, reflect the skin so as to expose the tissues whatever altered in colour, and dissect them out thoroughly. Then cau-

terize with a red-hot iron or live coal, or apply strong nitric acid, or solution of permanganate of potassium. If no better means available, explode gunpowder on the part.

3. **Antivenene.** Usually in 10-e.e. tubes, or in light, dry, yellow scales soluble in water. Inject 40 e.e. into wall of abdomen. May clean the skin by washing with soap and water, and then with turpentine or whiskey, or may take other antiseptic precautions; but it is most important to lose no time. The dose of "Anti-Venom" is 25 e.e., repeated if necessary.

4. **Strychnine** has been largely employed in cases of snake-bite both in Australia and in India. A gr.  $\frac{1}{60}$  should be injected into the arm, the dose being repeated cautiously at frequent intervals, until, if necessary, ten doses have been given.

5. **Stimulants.** Brandy, whiskey, champagne, &c., should be given freely. People who have been bitten by venomous snake will take almost any amount of alcohol. A man bitten by a cottonmouth took over four pints of strong apple-brandy in less than four hours, and at the end of the time he was only comfortably drunk. Total abstainers should avoid rattlesnakes.

6. **Bleeding** from one arm with **transfusion**

into the other is likely to prove of avail. For composition of solution, see Transfusion, p. 38.

7. **Artificial respiration** should be maintained. Keep the patient warm and at rest, and give him plenty of fresh air as long as necessary.

8. **Permanganate of potassium.** Inject under the skin, in two or more places, twenty minims of solution of permanganate of potassium, which should be freshly prepared. It is essential that the antidote should come in actual contact with the poison, and it is a good plan to inject into the orifice made by the fangs of the snake. It is a chemical, not a physiological antidote. If limb much swollen make three or four injections at circumference of the swelling. Efficacy of this mode of treatment problematic.

9. **Potash.** May use liquor potassæ, one part with six of water, in same way, but would be necessary to use it with more caution.

10. **Ammonia.** Halford's plan consists of the injection into the radial vein, by means of a hypodermic syringe, of twelve minims of the liquor ammoniæ fortior, diluted with three times its volume of water. The vein should be first exposed.

People who live in districts where venomous snakes abound should from time to time take



small doses of the venom by mouth, so as to render themselves immune. This is probably the secret of the confidence with which snake-charmers handle these animals with impunity.

### SOAP LEES.

This consists of carbonate of potassium, or sodium, mixed with caustic alkali. For treatment, see POTASH.

### SODA.

*Treatment.*—1. **Vinegar, acetic acid**, citric acid, **lemon=juice**, or orange-juice, freely diluted with water.

2. **Demulcent drinks**, such as white of egg and water, milk, gruel, and barley water.

3. **Olive oil** freely.

### SORREL (Salts of).

See OXALIC ACID.

### SQUILL.

An active heart poison. See DIGITALIS.

## STOVAINE.

Now frequently employed by subarachnoid spinal injection for production of local anæsthesia and relief of pain in lower extremities; but is not free from danger. I have twice seen an injection of 5 e.c. of a one per cent. solution induce maniacal delirium lasting twenty-four hours. Other symptoms noted after injections of 0·06 gramme are unconsciousness, respiratory trouble necessitating artificial respiration, paralysis of the abductors of the eyes, cyanosis and failure of heart's action. These symptoms may be followed by headache of some days' duration. In one case after this dose there was paralysis from the umbilicus downwards, including bladder and rectum. The patient developed cystitis and bed-sores and died three months later.

*Treatment.*—See COCAINE.

STRAMONIUM—THORN-APPLE—DEVIL'S  
APPLE—JAMESTOWN WEED.

(*Datura stramonium.*)

Annual plant common in England, frequently found in waste places and growing on dung-hills. Easy of cultivation.

In India the *Datura fastuosa* is largely used for criminal purposes, the class using it being known as the *Daturiahs*. The plant is common in India, and the natives are very familiar with its effects as an intoxicant and death-dealing drug. It is used for the purpose of murder, and also for hocussing, so that the victim may be more easily robbed. A box taken from a professional poisoner contained:—(1) datura seed, (2) powdered seed for mixing with food, (3) an essence of datura for mixing with sugar, tobacco and flour, (4) flour mixed with datura flour.

*How taken.*—Infusion of leaves mistaken for senna tea, and for horehound tea. Seeds eaten by children. Extract dispensed for extract of sarsaparilla.

*Symptoms.*—Similar to belladonna poisoning. Dryness of skin and throat. Dilated pupils. Delirium, spectral illusions, double vision. Rash on skin. Paralysis of lower extremities. Coma.

*Fatal dose.*—One hundred seeds killed a child two years old. Death from decoction of one hundred and twenty-five seeds. Recovery after taking half an ounce of the leaves infused in boiling water.

*Treatment.*—AS FOR BELLADONNA.

## STROPHANTHUS.

Seeds of the *Strophanthus Kombé* of West Africa. Belongs to the Digitalis group. For treatment, see DIGITALIS.

## STRYCHNINE.

An alkaloid found both in *Nux Vomica* seeds (*Strychnos nux vomica*) and St. Ignatius' Bean (*Strychnos ignatia*), also in some of the other Strychnaceæ.

*How taken.*—Cases of poisoning of frequent occurrence. Many deaths from vermin killers, which are usually made of meal or flour with strychnine and perhaps arsenic. The names of Butler, Battle, and Gibson are not unfamiliar to the toxicologist. Death from eating pheasants, larks, and other birds killed with strychnine. Often mistaken for santonin, which it somewhat resembles—also given instead of salicin and of jalapin and rhubarb. In one case sold for tooth-powder, and in another as a seidlitz powder. In one instance a man inoculated his hand with it whilst making rat poison. Often used for suicidal purposes, sometimes for murder.

*Symptoms.*—Tetanus, convulsions coming on in paroxysms at intervals varying in different cases from three minutes, to half an hour, each lasting from one to five minutes or even longer. Opisthotonus, as a rule the whole body being arched backwards, but sometimes emprosthotonus (arched forwards) or pleurotonus (sideways). During paroxysm eyeballs prominent and pupils dilated, respiration impeded, pulse feeble and very rapid. Sometimes convulsive screams. Often great anxiety. Usually death from asphyxia during a paroxysm, or may be from collapse.

*Diagnosis.*—Only difficulty is from idiopathic or traumatic tetanus.

1. Absence or presence of a wound may be some guide, but if wound small or not of recent date, will not give much help.

2. In traumatic tetanus paroxysm affects chiefly the masseters, the cervical muscles and muscles of the extremities, the muscles of respiration being less involved. In strychnine poisoning tetanus of respiratory muscles very prominent.

3. In traumatic tetanus trismus or lockjaw is usually the first symptom. In strychnine poisoning it may be absent, but never lasts

longer than the spasm of the other muscles, and it is never the only symptom.

4. In traumatic tetanus epigastric pain—probably from spasm of the diaphragm—is always severe, whilst in strychnine tetanus it is absent.

5. Strychnine tetanus runs its course in a few hours, ordinary tetanus may last for some days.

*Fatal dose.*—Three grains usually fatal. Smaller doses sometimes fatal, gr.  $\frac{1}{2}$ , for example; gr.  $\frac{1}{16}$  may kill a child. In one case recovery after twenty grains, but an emetic was given at once.

*Treatment.*—1. **Stomach=tube**, if patient seen at once, but after tetanic symptoms have set in, the introduction of the tube will excite a paroxysm unless chloroform administered. **Emetics** of mustard, sulphate of zinc, or ipecacuanha. Should difficulty be experienced in opening the jaw, a hypodermic injection of apomorphine (10 minims of the one per cent. solution) should be given, or the patient may be put under chloroform.

2. **Animal charcoal**, *ad libitum*, or **tannic acid**, or tincture of iodine.

3. **Bromide of potassium**, half an ounce

in water, with thirty grains of **hydrate of chloral**. Two drachms of the bromide, with or without ten grains of chloral, to be given every fifteen or twenty minutes if necessary.

4. **Nitrite of amyl** inhalations, on a handkerchief held to the nose.

5. The patient may be kept fully under **chloroform** or **ether**.

6. **Curare**. A hypodermic injection of gr.  $\frac{1}{2}$  (6 minims of the 1 in 12 solution) may be given, and repeated if necessary.

7. **Artificial respiration** if possible. *This is important.*

*Tests.*—Both physiological and chemical tests for strychnine are extremely delicate. Dr. Dupré tells me he thinks it would be possible to detect chemically  $\frac{1}{200000}$  grain. The alkaloid has a characteristic bitter persistent taste. It is only very slightly soluble in water, but readily imparts its bitter taste to the most dilute solutions. Bichromate of potassium precipitates chromate of strychnine, which is easily recognized under the microscope by its crystalline form. If the solid strychnine residuc is dissolved in a few drops of cold strong sulphuric acid, the addition of an oxidizing agent such as a crystal of bichromate

of potassium or a little binoxide of manganese produces a magnificent play of colours—blue, violet, purple and red predominating.

### STRYCHNINE AND MORPHINE.

The morphine may delay the appearance of strychnine poisoning for some time—in one case for eight hours.

### SULPHONAL.

Other members of the Sulphone group are trional, tetronal and veronal. Is a pure hypnotic and possesses no analgesic properties. Insoluble in cold water, but dissolves in fifteen parts of boiling water. From its insolubility slow in action, so that must be administered three hours before its effects are desired. Elimination very slow, so that drowsiness often prolonged and may continue next day. Official dose, ten to thirty grains. May produce giddiness, ataxic disturbance of movements of the hand and loss of motor power in the legs. Patients "unable to stand," "unable to stand or walk properly," "present the appearance of being drunk, tumbling and walking about unsteadily." In some cases a



popular skin eruption. In one case death in forty hours after two fifteen-grain doses taken in an hour and a quarter. In another case patient took over an ounce. When seen was completely insensible, pupils mormal and reacting to light, anæsthesia, especially of conjunctivæ, profuse perspiration, suppression of urine. Death suddenly on fourth day.

The ordinary symptoms of "sulphonism" are noises in the ears, headache, vertigo, confusion of thought, hallucinations and weakness and incapacity for mental or physical work. Other symptoms noticed are ptosis, œdema of the eyelids and cyanosis. May be gastritis. When sulphonal is administered continuously for some weeks at a time the patients suffer from gastrointestinal disturbances, vomiting and constipation, swelling of the joints, pain in the lower extremities, failure of co-ordination and diminution of the reflexes with a scanty secretion of urine presenting a peculiar red colour. This cherry-red urine is due to hæmatoporphyrin, the result of the direct action of the drug on the blood. It is of evil import, and by some is said always to be attended with a fatal issue.

*Treatment.*—Emetic. Strong coffee. Hypodermic injections of  $\frac{1}{20}$  grain of strychnine,

SULPHURIC ACID—VITRIOL—OIL OF  
VITRIOL.

*How taken.*—Used for suicidal purposes by domestics, mechanics, &c. Mistaken for some beverage. Used in an enema in place of olive oil. For purposes of murder given to children whilst asleep. Pouring acid in ears of victim whilst asleep.

*Symptoms.*—Burning pain extending from mouth to stomach. Mucous membrane of mouth white in colour. Vomiting and violent retching, black bloody masses being ejected in large quantities. Insensibility, with perhaps violent tetanic spasm from the intensity of the pain. Death may occur very rapidly, or if stomach empty, perforation, peritonitis, and death less rapidly. If life prolonged, raging thirst with inability to swallow. Aphonia. Copious salivation. Skin pale and cold, and covered with clammy perspiration. Shreds of mucous membrane may be detached in vomited matter or with motions. Death perhaps from secondary symptoms, such as stricture of the œsophagus.

*Fatal dose.*—Much depends on amount of food

in the stomach. Almost any appreciable dose may cause death, but on the other hand a patient might recover after taking as much as an ounce.

*Treatment.*—1. **Soap and water, chalk and water**, whitewash and water to be taken freely. Large draughts of **water** if nothing else at hand. *The nearest remedy is the best.* Time all-important.

2. **Magnesia, lime-water, or Carbonate of sodium**, or Carbonate of potassium. Common **washing soda** diluted freely with water.

3. **Milk, white of egg**, oil, linsced tea, thick gruel or arrowroot are all useful.

4. **Morphine**. A hypodermic injection of half a grain to ward off shock.

As a rule the stomach-pump cannot be employed with safety. Gastro-enterostomy might be useful.

*Tests.*—White precipitate with barium nitrate insoluble in hydrochloric acid even on boiling. In the case of very dilute acid, put a drop of the solution on filter paper, dry carefully over a spirit lamp or candle, when a deep black spot of charred paper will gradually appear.

See also VITRIOL-THROWING.

## TARTARIC ACID.

*How taken.*—Mistaken for aperient medicine.

*Symptoms.*—Great pain in abdomen, convulsions, collapse, death.

*Fatal dose.*—One ounce.

*Treatment.*—1. **Chalk, lime,** or whitening given freely in water. The whitewash from a wall, or fence, or ceiling may be used. Lime water is an antidote, but the saturated solution, being stronger, is better. It should be given in drachm doses frequently repeated.

2. **Castor oil.** An ounce of castor oil should be given to clear out the intestines.

The administration of potash, soda, ammonia, or the carbonates should be avoided.

## TEETHING POWDERS.

Commonly prepared according to following formula;—Calomel, one grain; Dover's powder, two grains; sugar of milk, three grains. Mix. This is the dose for a child over one year of age. Children under twelve months are given half or a quarter of a powder. If bad symptoms result, treatment should be as for opium poisoning.

## TOBACCO—NICOTIANA TABACUM.

*How taken.*—Mistaken for coffee. Overdose given as an emetic. Tobacco-chewing. Used as a compress for wounds. Taken to cure worms. Applied locally to cure itch. Used to procure abortion. Accidents common from giving children old tobacco-pipes to blow soap-bubbles. Packets of "fags" six a penny sold to boys a source of danger.

*Symptoms.*—Nausea, vomiting accompanied by great weakness and faintness. Confusion of ideas, dimness of sight, weak pulse, cold skin covered with clammy perspiration. Pupils at first contracted and then dilated.

*Fatal dose.*—Death in a boy from smoking pennyworth of twist tobacco.

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha.

2. **Tannic acid**, half a drachm in water repeated frequently, or strong tea. To be introduced by the stomach-pump if necessary.

3. **Nux Vomica**. Twenty minims of nux vomica by mouth, or better, a hypodermic injection of gr.  $\frac{1}{5}$  of **strychnine**.

4. **Stimulants**. Brandy, champagne, sal volatile, chloric ether, to be given freely.

5. **Warmth** to the surface by hot bricks and hot blankets. Friction with the warm hand.

6. **Recumbent position** should be strictly maintained.

### TRIONAL.

Belongs to the Sulphone group, and is given as a hypnotic. Is more soluble than sulphonol, so that it acts more quickly, and its effects pass off more rapidly. May produce hæmaturia. Dose, ten to thirty grains. See SULPHONAL.

### TURPENTINE—OIL OF TURPENTINE— SPIRITS OF TURPENTINE—TURPS.

*How taken.*—Sometimes given to children for criminal purposes. Taken to expel worms. Given in mistake for other medicines.

*Symptoms.*—Odour in breath. Intoxication. Contracted pupils, stertorous breathing, coma, collapse, and tetanic convulsions. Irritability of bladder, the urine having the odour of violets. Some resemblance to poisoning by opium.

*Fatal dose.*—Child under two years of age recovered after taking a table-spoonful.

*Treatment.*—1. **Stomach=pump** or **Emetic** of sulphate of zinc, or ipecacuanha. Should these fail, a hypodermic injection of gr.  $\frac{1}{5}$  of **apomorphine**.

2. **Sulphate of magnesium**, an ounce in water as a purgative.

3. **Demulcent drinks**, such as milk, white of egg and water, barley water.

4. **Morphine**. If much pain, a hypodermic injection of half a grain of morphine, or thirty drops of laudanum by mouth.

## VERATRIA—VERATRINE.

An alkaloid found in *Sabadilla*, and probably also in *Veratrum album* and *Veratrum viride*. May be crystalline, but is more commonly amorphous. No odour, strongly and persistently bitter and highly acrid taste.

*How taken.*—Usually mistaken for other medicinal substances. Murder.

*Symptoms.*—Burning sensation in throat and gullet, with increased secretion of saliva. Painful sensation may extend to stomach, and there may be inability to swallow. Retching

and vomiting, diarrhœa and pain in the bowels. Headache, palpitation, with feeling of anxiety, giddiness, faintness, slow and weak pulse, respiration superficial and laboured. Pupils generally dilated, but may be contracted. May be convulsions.

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha.

2. **Stimulants**, brandy, champagne, chloric ether, or sal volatile.

3. **Coffee**. Hot strong coffee, injected into the rectum.

4. **Warmth** to the extremities, hot-water bottles, warm blankets, friction with the warm hand.

5. **Recumbent position** to be strictly maintained.

## VERDIGRIS.

An acetate of copper or a mixture of acetates. Much used in the arts. Suicide and attempted murder. Half an ounce fatal.

For treatment, see COPPER.



## VERMIN KILLERS.

Usually contain strychnine, arsenic or phosphorus. *Battle's* consists of 23 per cent. of strychnine with sugar, flour and Prussian blue. *Butler's* consists of 5 per cent. of strychnine mixed with flour and soot; a sixpenny packet weighs about a drachm and contains from 2 to 3 grains of strychnine. *Gibson's* contains half a grain in each packet. *Simpson's* contains 40 per cent. of arsenious acid with starch and malt. *Roth and Ringeisen's* is composed of phosphorus and arsenic.

## VERONAL.

Belongs to the Sulphone group and is allied in action to sulphonal, trional and tetronal. Is used as a hypnotic, especially in asylum practice. Dose, 7 grains. There have been many cases of poisoning recently. A dose of  $4\frac{1}{2}$  grams, or about 75 grains, was followed by deep sleep followed by nausea, vomiting, swimming in the head and staggering gait. A dose of 9 grams, or about 135 grains, produced profound stupor followed by convulsions, from which, however, the patient recovered. A dose of 11 grams, or about 165

grains, proved fatal in twenty hours. After 1 ounce the symptoms were those of profound morphine poisoning, with coma, cyanosis, shallow breathing and contracted pupils. The patient died in twenty hours without regaining consciousness.

For treatment, see SULPHONAL.

### VITRIOL-THROWING.

This has become a popular amusement of late years. It is a woman's mode of marking her appreciation of her husband's infidelity.

*Treatment.*—1. Wipe off the acid at once and wash the face in water, using soap freely. A handful of soda or bicarbonate of sodium, or bicarbonate of potassium in a basin of water is still better. Be as quick as you can.

2. Should the acid have gone in the eyes, first wash them with water and then syringe them with an alkaline lotion (five grains of bicarbonate of sodium to the ounce of water). Open the lids and drop in a few drops of castor or olive oil.

3. Keep your patient quiet and in a darkened room. If much shock, give brandy and water or champagne, followed by a hypodermic injection of morphine.

4. If any elevation of temperature during the first twenty-four hours, give a minim of tincture of aconite every ten minutes for the first hour and then hourly for six hours.

### WARBURG'S TINCTURE.

A remedy of great value in the treatment of intermittent and remittent fevers. Consists of sulphate of quinine (nine and a half grains to the ounce), Socotrine aloes, rhubarb, "consec. Damocrates" (a mixture of aromatics official in Ph. Lond., 1746), elecampagne, crocus, fennel prepared chalk, gentian root, zedoary (a kind of ginger), cubebs, myrrh, camphor, white agaric (the agaric of the larch), and proof spirit. It also contains a trace of opium, but the quantity is so small as to be of no importance. The dose is half an ounce by mouth or rectum. Given as an antiperiodic and to determine crisis in cases of acute lobar pneumonia repeated in three hours. For full account of uses, &c., see *Lancet*, Nov. 13th, 1875.

WASP-STINGS. See BEE-STINGS.

## WHITE PRECIPITATE.

*Symptoms.*—Vomiting, cramps, purging, griping pains in the stomach, convulsions.

*Fatal dose.*—Not a very active poison, might recover after taking three drachms or more.

*Treatment.*—1. **Stomach=tube** or **Emetic** of mustard, sulphate of zinc, or ipecacuanha.

2. **White of egg** (unboiled), mixed with water, to be given in unlimited quantities. **Flour** and water, arrowroot, gruel, barley water, and linseed tea, are all useful.

3. **Stimulants**, brandy, chloric ether, sal volatile.

## WINE.

Wine is not usually regarded as an acute poison even by total abstinence advocates, but I know a man, an American, on whom a single glass of champagne taken at any time acts as a prompt and powerful emetic. The brand makes no difference, and both sweet and dry champagnes affect him in the same way. He tells me that it has been so from his boyhood upwards, and that before he recognized his idiosyncrasy he was often surprised by the violent sickness which occasionally followed what appeared to be a moderate

and carefully selected dinner. He is not particularly susceptible to the action of alcohol in other forms, and can take port, sherry and Burgundy without inconvenience. Effervescing waters he drinks on occasion, but for some reason which he can hardly explain he avoids them as much as possible.

A short time ago he accepted an invitation to dine with an old friend and go to the theatre. His host was a connoisseur of champagne and had no other wine on the table. He chaffed my friend about his "fads and fancies" until at last, much against his better judgment, he was induced to take a single glass of champagne, which he sipped slowly, making it last throughout the dinner. He felt very uncomfortable, but was fortunately not obliged to leave the table. At the conclusion of the repast they took a cab and started for the theatre. They had not gone half a mile before my friend was attacked with such severe faintness and violent nausea that the vehicle had to be stopped at the nearest hotel. He managed to reach the lavatory with difficulty and was immediately seized with an attack of vomiting which lasted over an hour. His pulse grew weak and he presented all the features of collapse. Half a tumbler of brandy was forced

down his throat, and little by little he recovered and was ultimately enabled to proceed to the theatre.

I have never met with an exactly analogous case, but a student of mine at the Hospital tells me that a glass of champagne taken on an empty stomach always acts with him as an emetic. He can take his fair share at dinner, a fact for which many of his friends are in a position to vouch.

### YEW.

(*Taxus baccata*.)

*How taken*.—Leaves or berries eaten by children or lunatics. Decoction of leaves taken to bring on the menses. Yew-tree tea sometimes used to procure abortion. Contains an alkaloid, taxine.

*Symptoms*.—Giddiness, vomiting, muscular weakness, pains in abdomen, convulsions, insensibility, coma, dilated pupils, paleness of the countenance, small, irregular pulse, cold extremities, nausea and collapse. Death may be sudden and unexpected.

*Fatal dose*.—Not known, but said that a teaspoonful of the leaves has caused the death of an adult.

*Treatment.*—1. **Emetic** of mustard, sulphate of zinc, or ipecacuanha. Purgatives.

2. **Stimulants** freely, such as brandy, champagne, sal volatile, or chloric ether. External warmth.

## ZINC.

The chloride is the salt which most commonly gives rise to dangerous symptoms. Used in soldering as a flux. Basis of Burnett's Disinfecting Fluid, which contains about 230 grains to the ounce. White vitriol is the sulphate.

*Symptoms.*—Corrosion of lips and mucous membrane of the mouth. Pain and burning sensation in throat and stomach, incessant vomiting of blood-stained fluid, difficulty of swallowing, acceleration of pulse and respiration, dyspnoea, dilatation of pupils, epileptiform convulsions, paralysis of the voluntary muscles, coma, death. In one case destruction of the whole of the stomach.

*Treatment.*—1. **Carbonate of sodium** or **carbonate of potassium** in large quantities dissolved in warm water. Common washing soda will do if well diluted.

2. **Milk** and **eggs** freely, with tepid water.

3. **Tannic acid**, gallie acid, decoction of oak bark, or **strong tea**.

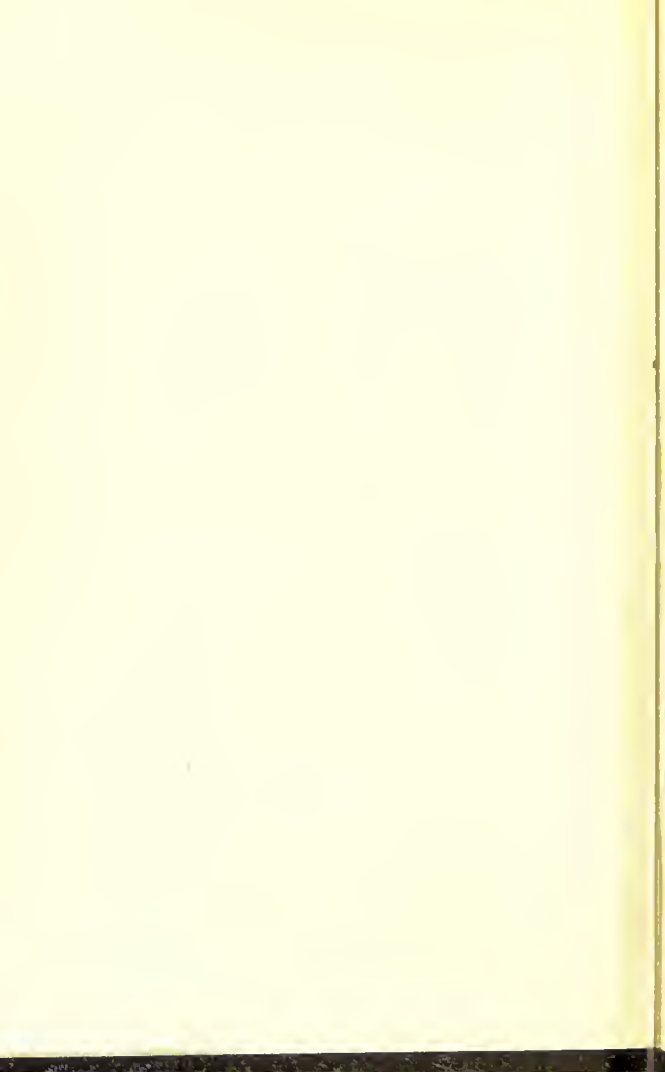
4. **Morphine**. A hypodermic injection of half a grain, or thirty drops of laudanum by mouth.

5. Linseed-meal poultices to abdomen.

6. If much pain in the abdomen, an enema of gruel or starch and water may be given.



CHRONIC POISONING.



## CHRONIC POISONING.

Cases of chronic poisoning by certain drugs are of constant occurrence in medical practice ; and as the symptoms they present, and the treatment they require, differ somewhat from those of acute poisoning, it has been thought best to deal with them separately.

### ABSINTHE—ABSINTHISM.

Absinthe, or wormwood, is the *Artemesia absinthium*, an indigenous plant belonging to the Compositæ. It contains a volatile oil and a bitter principle, absinthine. The liqueur is an alcoholic solution of oil of wormwood with a little angelica, anise and marjoram.

The habitual use of this liqueur produces a condition which has been called *absinthism*.

It is characterized by restlessness at night, with disturbed dreams, nausea and vomiting in the morning, trembling of the hands and tongue,

vertigo and epileptiform convulsions, in which the patient loses consciousness, falls, bites his tongue, foams at the mouth, makes grimaces and throws his arms about. The convulsions are reflex, and are probably due to excitation of the cerebral cortex.

Hallucinations occur without any of the other symptoms of delirium tremens, and when tremors co-exist they are limited for the most part to the muscles of the arms and hands.

The drug exerts its action chiefly on the cervical portion of the spinal cord.

The prognosis is not unfavourable if the habit is discontinued.

### ALCOHOL—CHRONIC ALCOHOLISM.

Cases of chronic alcoholism are so common that it seems hardly necessary to describe them.

It must be remembered that it is not so much the quantity we take as the inferior quality with which we are supplied.

The alcoholic stimulant in whatever form it may be taken should be free from fusel oil to such an extent that a healthy man, even after

exceeding considerably, should not experience any other effect than that of pure stimulation.

If on the following morning there is persistent headache, followed by continued dilatation of the cerebral blood-vessels, with incapacity for work, and dulness of ideas, it may be taken for granted that the wine was bad and contained fusel oil.

There is no test except the physiological one readily applicable to wines and other similar products of complex composition.

The most injurious of all alcoholic drinks is the spirit obtained from potatoes, as it contains by far the largest proportion of fusel oil. It is used as a basis for making many of the cheaper forms of spirits in common use.

*Symptoms.*—The symptoms vary somewhat in different cases, but as a rule the chronic drinker suffers from loss of appetite, nausea, and morning vomiting, a furred tongue, and a characteristic breath.

The limbs become tremulous and enfeebled, the face is dull and expressionless, and presents a plentiful eruption of "grog blossoms."

The sleep is disturbed, the patient is low-spirited and vacillating, and is cowardly, cunning, and essentially untruthful.

In addition the patient may present symptoms of commencing cirrhosis of the liver, or may exhibit indications of affections of the nervous centres, such as delirium tremens, epilepsy, mania, dementia, or general paralysis.

A gouty diathesis may make itself unpleasantly felt, and cause the sufferer infinite trouble; on the whole, his lot is not a happy one.

There are two causes of morning vomiting, drink and pregnancy. When pregnancy can be excluded, alcoholism is the alternative diagnosis.

*Treatment.*—When a man drinks there is no possibility of doing him any good if he is left to his own devices. If he can be taken in hand and a strong will substituted for his own weak one, there is a chance for him. Sometimes a woman can be found to perform this function. Often she is a dismal failure, but she may be a striking success. It is the choice of two evils.

There is no specific drug cure for alcoholism.

Hypnotism has been vaunted as a cure for alcoholism. Sometimes it acts well. If you can "put an impression" upon a man and induce him to believe that a brandy-and-soda will act as an emetic, he will probably abstain from trying the experiment. You would probably get

an equally good result from acting on his "moral nature," only as a rule he has none.

The only method of reclaiming a drunkard is to put him in a "Retreat" under the provisions of the Habitual Drunkards Acts (42 and 43 Vic., c. 19, and 51 and 52 Vic., c. 19). The great difficulty with a man is that if you lock him up he can do no work, and his income stops. With women it does not matter, for as a rule they are not bread-winners.

Another difficulty is that the patient's consent has to be obtained, and although a man may be a slave to drink, he often has a very great objection to sacrifice what he calls "his liberty."

Under the Act the retreat for the reception of patients must be duly licensed, and must be open to inspection at least twice a year.

The patient who wishes to enter the establishment must make application in writing, stating the period during which he wishes to remain under treatment. His application will not be entertained unless accompanied by a certificate of immoral character attested by two justices whose business it is to see that he understands the nature of his application.

These formalities having been satisfactorily arranged, the patient will be detained during

the time he has selected, which, however, must not exceed one year. Should he escape he may be arrested on a warrant, and any person assisting him to escape may be punished; moreover, it is an offence to supply the patient with any intoxicating drink, or with any sedative or stimulant drug without the authority of the licensee or the medical attendant.

In the way of accessory treatment, various drugs such as arsenic, iron, and bromide of sodium will be found useful.

Alcohol may be readily separated from organic mixtures and concentrated by distillation. There are many chemical tests; those depending on the formation of aldehyde with sulphuric acid and bichromate of potassium, and of iodoform with potash and solution of iodine in iodide of potassium being the best. The odours both of aldehyde and of iodoform are sufficiently characteristic.

## ARSENICAL POISONING.

Cases of chronic poisoning by arsenic are by no means of unfrequent occurrence. It is an unquestionable fact that the public health is



suffering from the use of arsenic, in the manufacture of fabrics and other articles, to an extent not yet fully appreciated.

Wall papers often contain large quantities of arsenic, and the use of this deleterious ingredient is by no means confined to green papers. As a matter of fact, the green colour of wall papers is more commonly due to the presence of copper than of arsenic. Arsenic is used in the preparation of a great variety of colours, and is found even in French white. The fact of a paper being marked "non-arsenical" is no proof that it does not contain arsenic. Arsenic occurs commonly, not only in wall paper, but in candles, carpets, advertisement cards, playing cards, wrappers for sweets, ornaments for children's toys, india-rubber balls, dolls, japanned goods, Venetian blinds, floor-cloths, book-binding, and a number of other things. Artificial florists are frequent sufferers. Arsenic is present in the coloured wrappers of many cigarettes.

The subject of chronic arsenical poisoning produced by arsenical wall papers is of especial interest. It is probable that a volatile arsine is produced by the action of arsenic on the size employed for attaching the paper to the wall,

aided by the action of warmth and moisture. In this connection, see PTOMAINES and AQUA TOFANA.

The symptoms are puffiness of the eyelids, smarting and redness of the eyes, thirst and dryness of the mouth, and redness of the lining membrane of the nose. Loss of appetite, and a sensation of weight or soreness at the pit of the stomach, accompanied with a dry and dirty-looking skin, often covered with scales or sore patches, are common symptoms. Aching pains are experienced in the limbs and joints, whilst the sleep is broken or disturbed by dreams. The voice is rough and harsh, and there are nausea, vomiting and diarrhœa, the motions being slimy and containing blood. Other symptoms are spitting of blood, great loss of flesh and general debility. Chronic arsenical poison has on more than one occasion been mistaken for phthisis.

The treatment consists in the removal of the cause. If due to arsenical wall paper, the paper should be stripped from the walls and burnt. Change of air and scene are important. Tonics such as cod-liver oil, iron and quinine should be given freely.

## BRASS-WORKER'S DISEASE.

Brass-founding is an important industry. The process consists of melting down copper and crude zinc (spelter) with varying quantities of lead and tin. For "dipping," nitric acid is employed. Some of these ingredients contain arsenic.

The patients become anæmic and suffer from gastric disturbance. There may be tremor of the hands, lips and tongue. Sometimes there are pulmonary symptoms from the inhalation of the dust of copper and brass. There is a deep green tooth-line and the hair is of a greenish tint. In acute cases there may be "brass-worker's ague" characterized by shivering (not a definite rigor), with sweating, nausea, vomiting and malaise.

The symptoms are probably due partly to copper and partly to arsenic.

The patient must at once be removed from his dangerous occupation. The treatment commonly adopted is to give large draughts of milk. Iron is useful to counteract the anæmia.

## CHLORAL—CHLORALISM.

Cases of chloralism are by no means uncommon, and are met chiefly amongst women who go out a great deal in society, and think they need a sedative after the exertions of the day and night. Many of these women smoke a good many cigarettes and drink as well, so that it is not always easy to say how much is due to the chloral and how much to the other disturbing causes.

The symptoms commonly met with are :—

1. Digestive troubles due to the direct action of the drug on the mucous membrane of the stomach.

2. Dyspnœa which may be slight and felt only on exertion, or may be persistent and alarming.

3. Skin eruptions, usually urticarial in character. Petechiæ and ecchymoses are met with, and ulceration about the nails is not uncommon.

4. Frequently the patient exhibits an excited, hurried manner, is voluble in speech, and suffers from vertigo, wakefulness, and depression of spirits. After a time there is a

certain amount of enfeebled nerve-power and weakened mental activity.

The only way of treating these patients is to cut off the supply. If the patient can be kept without money, and if chemists and grocers and patent-medicine vendors can be warned against supplying her with drugs the habit may be broken. If these steps cannot be taken the only plan is to put her in a retreat or establishment where she can obtain nothing but what is given her.

Most of these patients end up by taking an over-dose and killing themselves. The usual verdict is "death by misadventure."

### COCAINE—THE COCAINE HABIT— COCAINE INEBRIETY—COCAINISM.

It is generally admitted that the excessive use of coca is injurious, and that the confirmed "coquero" or chewer becomes after a time listless, haggard, and gloomy. He is not fit for much, either mentally or physically, and is anything but a lively companion. But the dangers arising from the habitual use of cocaine are much more pronounced, and cocaine inebriety is now a well-recognized disease.

Cocainism is not the outcome of using the drug at long intervals. Its comparatively transient effect and the demands of an over-stimulated nervous system necessitate frequent resort to the drug.

To some people nothing is more fascinating and seductive than indulgence in cocaine. It relieves the sense of exhaustion, dispels mental depression and produces a delicious state of exhilaration and well-being.

The after-effects are at first slight—almost imperceptible—but continual indulgence creates a craving which must be satisfied at all risks. The patient then becomes nervous, tremulous, sleepless, and without appetite, and is reduced to a condition of pitiable neurasthenia.

Erlenmeyer calls cocaine the third scourge of humanity, alcohol and opium being the first and second. It is commonly taken in the form of tablets sometimes combined with menthol.

The symptoms experienced from the prolonged use of cocaine are illusions of sight and hearing, neuro-muscular irritability and analgesia. In some recorded cases the patient has suffered from sleeplessness—which however, as a rule, soon passes away—dyspepsia, palpitation, an indisposition for work, an inaptitude for arriving at

a prompt decision, and a disposition to shun society.

Different Coca Wines are largely used by the public in doses of from half an ounce to four ounces. There is one kind of Coca Wine standardized to contain one-eighth of a grain of the pure alkaloid in two drachms which should be used with especial caution. Caution should also be exercised in prescribing strong solutions of cocaine in lotions and sprays.

## LEAD.

“WRIST DROP”—“LEAD COLIC”—  
“PLUMBISM”—“LEAD PALSY.”

Lead is often spoken of as being a ubiquitous poison. From its manifold uses cases of lead poisoning are of constant occurrence. The modes in which it is introduced into the system may be classified as follows :—

### I. OCCUPATION.

(a) *House-painters* suffer from lead poisoning, from neglecting to wash their hands before taking food. In grinding the carbonate which is largely used as a basis for paints, the fine

particles are often inhaled in sufficient quantity to produce lead poisoning. An acute attack in a house-painter may be excited by some particular job. Thus a man who habitually did outdoor work was seized whilst employed in painting the interior of a large conservatory, the temperature of which was raised to preserve the plants.

(b) *Potters* who use lead for glazing purposes are frequently sufferers. It is not common amongst those who handle the metallic ore—lead miners, for example.

(c) *Compositors* suffer from handling the type, type metal containing lead.

(b) *Barmen* suffer from handling and cleaning pewter pots, and from drinking in the morning the first glass of beer, which has stood in leaden pipes all night.

(c) *Card-players* suffer from the lead glaze on the cards, especially if they moisten the fingers in the mouth when dealing.

(f) *File-cutters*.—The files are bedded in lead whilst being “nieked,” and there is much dust and much “leading” of the hands, clothes, &c.

(g) *Electrical light workers*.—The plates are sometimes bedded in red lead, or are made from



red lead and nitric acid. These cases are less common now than formerly.

(h) *Japanners*.—The japanned articles are brushed over with colours containing lead, much dust being produced in the process.

(i) *Enamellers*.—The dust employed contains lead and a little arsenic. Cases are common.

## 2. ARTICLES OF FOOD.

(a) *Tinned foods*.—Meat, fish, shell-fish, fruits and vegetables packed in tins soldered with lead-alloys are distinctly unsafe. The articles most heavily loaded with lead are those substances which are rich in fatty matters, such as fish preserved in oil.

(b) *Farinaceous foods* are often contaminated by being kept in lead wrappers.

(c) *Pickles* when the jars or bottles are capped with leaden tops are very injurious.

(d) *Snuff* may be adulterated with red lead or may be unsafe from having been wrapped in leaden covers.

## 3. ARTICLES OF DRINK.

(a) *Water*.—Drinking water often becomes contaminated with the lead dissolved from lead pipes and the lining of cisterns. Pure water,

and water containing carbonic acid, carbonate of lime or sulphate of lime, have little or no action on lead. Carbonic acid indeed acts as a protective, by covering the lead with a fine insoluble film of the carbonate. Water containing much oxygen, nitrites, nitrates, chlorides, and especially organic matter, acts quickly on lead. Even a very small quantity, as little as  $\frac{1}{50}$  grain in a gallon, may suffice to produce lead poisoning. Water containing  $\frac{1}{20}$  grain to the gallon should be rejected as unsafe. A case is recorded from drinking water which had been allowed to stand in a cheap corrugated iron bucket. It has long been known that the use of moorland water often gives rise to lead poisoning. It has been suggested that the moors may become impregnated by the shot scattered over them by sportsmen whilst shooting.

(b) *Wine* is sometimes sweetened with acetate of lead, and produces lead poisoning. Shot are sometimes used for cleaning bottles, and if not turned out may be dissolved by the acid wine.

(c) *Spirits*.—Rum stored in leaden tanks or cisterns on board ship has caused lead poisoning in sailors.

(d) *Cyder* made in glazed earthenware vessels may prove injurious.

(e) *Lemonade and soda water* may produce lead poisoning when patent syphon tops are used.

(f) *Beer* is often contaminated by the lead pipes when the sale is not brisk, and people who take the first glass in the morning are especially liable to suffer.

(g) *Milk* which is sour readily becomes impregnated with lead. London milk is nearly always acid.

(h) *Tea* packed in lead is another source of trouble. Tea made in a metal teapot, and drunk out of a tin mug, which had been soldered, is recorded as a source of poisoning.

#### 4. ARTICLES OF APPAREL.

(a) Lead in the lining of hats has been known to produce lead poisoning.

(b) Brussels lace is often whitened with a preparation of lead.

#### 5. MEDICINES.

Lead given medicinally has been known to excite chronic lead poisoning, but it is of comparatively rare occurrence from this cause, and

the acetate may be given in five-grain doses three times a day for weeks or even months to check diarrhœa or hæmorrhage without producing bad effects.

#### 6. DYES AND COSMETICS.

(a) *Hair dyes* are a constant source of lead poisoning.

(b) *Cosmetics* containing lead have been known to prove injurious to actors, actresses, and professional beauties.

A case is recorded of lead poisoning from the use of "novelty transfer pictures" which were impressed on the hands and then licked off by the tongue. The boy died, and the post-mortem appearances were consistent with poisoning by lead. On chemical examination the pictures were found to be largely impregnated with lead.

In some cases of well-marked lead poisoning, the source of introduction of the poison may not be discovered, even after the most careful investigation. In one case which presented much difficulty, the symptoms were ultimately traced to presence of a leaden bullet which had lodged in the head of the tibia.

It should not be forgotten that in lead poisoning, as in gout, heredity acts as a predisposing cause when the exciting cause still continues.

### SYMPTOMS.

(a) *Cachexia*.—One of the earliest symptoms of plumbism is cachexia. There is a general feeling of ill-health and nutrition is not maintained. An anæmic condition is soon developed, and the skin acquires a dull earthy hue. There is a marked diminution in the red blood corpuscles, and a slight increase in the white ones.

(b) *Blue line on the gums*.—The blue line is observed at the edge of the gums where they join the teeth. It is one of the first symptoms to appear, and the last to disappear. It is always most marked opposite the incisors. It is absent when there are no teeth, and is well marked in people who fail to clean their teeth. It is seldom met with in people who scrupulously use the tooth-brush. It is due to the formation of sulphide of lead. The decomposition of food left about the margins of the teeth, and in their interstices, gives rise to the formation of sulphuretted hydrogen, which acts on the lead in the tissues, and favours its

deposition. The discoloration of the gums is not uniform, but is distributed in loops corresponding to the vascular papillæ of the mucous membrane. The pigment consists of granules, some of which are deposited inside, and some outside the small blood-vessels. The discoloration sometimes extends to the whole of the gums, and even to the contiguous portions of the cheek. The teeth are often discoloured, and the gums are retracted.

(c) *Colic*--*Lead colic*—"Painter's colic."—This is a tearing pain usually referred to the region of the umbilicus. The abdominal walls are retracted and rigid, and the pain is usually relieved by pressure, though not always. It is probably due to irregular contraction of the involuntary muscular tissue of the intestines. It is usually accompanied by digestive derangement, constipation, foul tongue, and fœtid breath.

(d) *Cramps*.—There are often cramps in the calves of the legs, in the penis and scrotum in men, and in the womb in women. There may be pains in the joints, especially of the extremities, often simulating rheumatism, and aggravated by cold and wet weather.

(e) *Lead paralysis or wrist drop*, usually of

the extensors of the forearm, especially those muscles supplied by the posterior interosseous branch of the musculo-spiral nerve. The supinator longus is supplied by a branch of the musculo-spiral nerve, before it divides into the posterior interosseous. This affords a point of diagnosis between paralysis from lead poisoning, and paralysis from disease of the musculo-spiral nerve. If the muscle is paralysed, it shows that the disease is not limited to the posterior interosseous nerve, and that it is probably not due to lead poisoning. The condition of the supinator longus is tested in this way :—Extend the paralysed forearm on the table with the radius upwards, then press down the wrist, and tell the patient to raise it from the table. The supinator longus, if not paralysed, becomes hard, contracted, and stands out firmly. In lead paralysis the muscles of the ball of the thumb waste, and in severe cases the deltoid and even the muscles of the neck and trunk are similarly affected. General paralysis may occur. As a rule there is only loss of motor power, but there may be loss of sensation. Swellings of an oval or elongated shape frequently form on the tendons at the back of the wrist,

contrasting prominently with the atrophied museles.

The museles post mortem are found to be greyish-red in colour or whitish and tough with considerable incrase in the interstitial connec-tive tissue. The origin of the disease is pro-bably in the spinal cord, and is due to hyperæmia and proliferation of the neuroglia with conse-quent contraction causing degeneration of the cellular elements.

(f) *Nervous phenomena*.—Of the cerebral phenomena to which the term *saturnine encephalopathies* has been applied, epileptiform convulsions are the most common. They are usually preceded by intense headache, vertigo, and dimness of vision. They may occur early in the disease, and come on suddenly and without warning. The convulsions which ensue later are associated with an albuminous condition of the urine, and are probably due to anæmia.

(g) *Menstrual disturbances*.—Profuse men-struation is in women a common accompani-ment of lead poisoning, and so is abortion. The husband may cause the woman to abort even when she is not a lead worker, especially if she does his washing.



(h) *General symptoms*.—Irritability of mind, loss of sleep, tearing and burning pain in the shoulders and arms, marked anæmia, wasting, and disturbance of digestion are common. Anæsthesia of large tracts of skin is often seen. Amaurosis and loss of sexual appetite are other symptoms.

The relationship existing between lead poisoning and gout is well known.

*Treatment*.—1. Blue pill at bed-time, saline draught in morning.

2. Sulphate of magnesium, one drachm; sulphate of iron, three grains; dilute sulphuric acid, fifteen minims; spirit of chloroform, fifteen minims, and peppermint water to an ounce. To be taken three times a day for four days. Fifteen minims of tincture of belladonna may be added to each dose if there is much colic.

3. Iodide of potassium, five grains; spirit of chloroform, fifteen minims; water to an ounce. To be taken three times a day. The bromides are just as efficacious as the iodides in eliminating lead.

4. Good diet. Good cooking. Cod-liver oil. Abstinence from alcohol.

5. Massage is of value in these cases,

especially for the paralysed muscles. Much depends upon the form of massage employed, and on the duration and frequency of each application. Faradisation for paralysed and wasting muscles, from ten to fifteen minutes daily, for two or three months. The slowly interrupted constant current similarly employed is even more efficacious. Passive movements or light dumb-bells for the extensors of the wrist may prove useful.

6. Hypodermic injections of strychnine, gr.  $\frac{1}{12}$  or more, into forearm once or twice a week very useful.

All of no avail if source of ingestion of lead not discovered and arrested. Prophylactic treatment is of the utmost importance, especially to workers in lead. The work-rooms should be thoroughly ventilated. Respirators should be provided and worn in the factory. Hands should be washed, and outer garments changed before leaving work. Meals should never be taken in the work-rooms. The workers should be examined by the medical officer at least once a week, and those exhibiting signs of commencing plumbism should be suspended for a period of three months. Warm baths should be taken frequently. No one should be allowed to begin

the work of the day without having had a substantial meal. Sulphuric acid drinks should be supplied to the work-people.

The following is the formula for "treacle beer":—Treacle, 15 pounds; bruised ginger, half a pound; water, twelve gallons; yeast, one quart; bicarbonate of soda, an ounce and a half; sulphuric acid, an ounce and a half; tincture of capsicum, two drachms. Boil the ginger in two gallons of water, add the treacle, stirring it in well, and then the remainder of the water, hot. Put it in a barrel with the yeast and the capsicum. When the fermentation is nearly complete, add the sulphuric acid mixed with eight times its bulk of water, and lastly the soda dissolved in a quart of water. Let it stand for three days, when it is ready for use.

## MERCURY.

### MERCURIALISM—HYDRARGYRISM— PTYALISM.

Cases of chronic mercurial poisoning are less common now than they were in the days when it was the fashion to treat every case of suspected syphilis with large doses of mercury.

Still they are met with from time to time, and the symptoms presented are the following:—

1. There is a disagreeable metallic taste in the mouth. The gums become swollen and tender, and assume a dark red colour. The teeth feel sticky as though their edges were glued together. The tongue swells and is covered with a thick fur, and the breath is offensive.

2. Ptyalism or salivation, the secretion of saliva being increased to such an extent that there may be from a pint to a pint and a half in the twenty-four hours.

3. Stomatitis or ulceration of the mucous membrane of the mouth comes next, and is often extensive.

4. A rash appears on the skin—*eczema mercuriale*—and periostitis is not uncommon.

5. Mercurial crithism; a low febrile condition, accompanied by intense prostration, and associated with anæmia, loss of flesh and profuse purging.

6. Mercurial tremor, various forms of paralysis, and epileptiform convulsions are met with towards the last.

Workers in mercury, such as water-gilders, looking-glass makers and the makers of barometers and thermometers, who inhale the

vapour of metallic mercury, exhibit a somewhat different train of symptoms. They suffer from "mercurial tremors." These tremors may come on suddenly, but usually appear gradually. The upper extremities are affected first, and then little by little the whole body. The patient who suffers from these tremors loses all power of co-ordination, so that he cannot carry a glass of water to his lips, cannot put his feet steadily to the ground, and when he attempts to walk, breaks into a dancing trot. Delirium, mania and imbecility are the ultimate results.

With regard to treatment, the great thing is to remove the cause. Gargles of chlorate of potassium and borax, tonics, good feeding, fresh air, and port wine are all useful.

### MORPHIA—MORPHINE—THE MORPHIA OR MORPHINE HABIT.

The introduction of the hypodermic syringe has placed into the hands of man a means of intoxication more seductive than any which has hitherto contributed to his craving for narcotic stimulation. It is usually first resorted to for the relief of chronic pain, such as neuralgia or rheumatism. The dose is rapidly increased

until as much as sixty grains of morphine have been taken in the day.

I. In slight cases when the administration of the drug is still in the hands of the medical adviser, the following rules will be found useful :—

1. Do not stop the injections suddenly.
2. Diminish the dose gradually and without telling the patient.
3. Do not give morphine alone, but combine it with atropine.
4. Diminish the dose of morphine, and increase the dose of atropine until the effects of the latter predominate. When the full effects of the atropine are experienced, the patient will complain that the injections have lost their effect, and will ask to have them discontinued.

II. In confirmed cases when the administration of the drug is in the hands of the patient, the following hints will prove of service :—

1. The patient must give up the custody of the syringe and morphine solution.
2. The dose must be diminished gradually so as to make but little demand on the moral strength and self-control of the patient. The rate of reduction should not exceed gr.  $\frac{1}{15}$  every three or four days.

3. The bowels should be kept well open.

4. Tonics should be given—quinine, iron, strychnine and so on.

5. If the patient cannot sleep, give bromide of sodium in half-drachm doses in plenty of water every night at bed-time. The dose may be repeated if necessary.

6. If the stomach is irritable or if diarrhœa is a prominent symptom, give carbonate of bismuth in half-drachm doses in milk three times a day. Another good remedy is carbolic acid and tincture of iodine, equal parts, a drop in water three times a day before meals.

7. If much depression, stimulants may be given, but cautiously and only in measured doses. Dry iced champagne is useful.

8. Isolation may have to be resorted to, but it is better to keep the patient occupied and amused. Massage is useful.

9. The patient must be fed up. A good cook is half the battle.

## OPIUM HABIT.

Is opium-eating or opium-smoking necessarily and universally pernicious?

It has been too much the custom of writers on

this subject to content themselves with drawing a doleful picture of a confirmed opium-debauchee, plunged in the lowest depths of moral and physical exhaustion; and having formed the premises of their argument from this exception, to proceed at once to involve the whole practice in sweeping condemnation.

We are told that the habitual opium-eater can be "recognized at a glance," that there is a "characteristic attenuation," a "withered countenance," a "halting gait," and a "glassy deep-sunk eye." His digestive organs are "in the highest degree disturbed," he eats nothing, has hardly an evacuation in a week, and is a "perfect wreck" both mentally and bodily. By degrees, as the habit becomes more confirmed, his strength fails, so that at last he can hardly crawl from place to place. After long indulgence, he suffers from "nervous or neuralgic pains," from which his beloved opium affords no relief. His agony when the drug fails to produce its accustomed effect is terrible, and he suffers "the torments of the damned."

Such are the accounts given by most of the older writers on the subject, but it is doubtful if there is any truth in them.

Much of our knowledge of the effects of opium



on the system is derived from the Confessions of De Quincey, the English opium-eater; and he tells us that from 1804 to 1812, a period of eight years, during which he was a dilettante eater of opium, he enjoyed perfect health, and was never better in his life. It was only later when he took the drug in enormous quantities that his health suffered.

It is well known that the Chinese are a nation of opium-caters, and yet they are a muscular and well-formed race, the labouring classes being capable of great and prolonged exertion under a fierce sun and in an unhealthy climate.

Many people have attained the age of sixty or seventy who have been habitual opium-caters for thirty years or more.

Should it be found necessary to undertake systematic treatment the following general indications may be followed:—

1. Place the patient under favourable hygienic conditions. If a town dweller, arrange for him to be taken in at a country house or at the seaside.

2. He should not be alone, but should have the benefit of congenial society. Young people in a house are a decided advantage, and the influence of female companionship in the case of a man is not to be neglected.

3. He should be encouraged to take exercise and to find some occupation or hobby to occupy his thoughts. As much time as possible should be passed in the open air. Walking, driving, riding, lawn-tennis, billiards, and digging potatoes, all have their uses.

4. The cooking should be good and above all varied. You will never cure a man of anything unless you feed him well and properly. Stimulants should be given at meals, but are not admissible in the intervals. Tobacco-smoking in moderation often proves beneficial.

5. A dose of half a drachm of bromide of sodium may be given at bedtime.

6. The dose of opium should be reduced gradually and never rapidly. Let the treatment extend over a period of a month or six weeks. If necessary reduce the quantity of opium without the patient's knowledge, and take care that he has not a private supply of his own. Give tonics such as quinine, hydrochloric acid, strychnine, capsicum, and gentian before meals.



## APPENDIX.

### THE OATHS ACT.

By the Oaths Act 1888 (51 and 52 Vic., c. 46, s. 5) it is enacted that "If any person to whom an oath is administered desires to swear with uplifted hand, in the form and manner in which an oath is usually administered in Scotland, he shall be permitted so to do, and the oath shall be administered to him in such form and manner without further question."

The witness takes the oath standing, with the bare right hand uplifted above the head.

The following is the formula: "I swear by Almighty God that I will speak the whole truth and nothing but the truth."

The presiding judge should say the words and the witness should repeat them after him.

The words "So help me, God," which occur in the English form, are not employed and there is no kissing of the book.

The Scotch form constitutes an oath and is not merely an affirmation.

The judge has no right to ask if you object on religious grounds or to put any question. He is bound by the provisions of the Act. The enactment applies not only to all forms of the witness-oath, whether to civil or criminal courts, or before coroners, but to every oath which may be lawfully administered either in Great Britain or Ireland.

It will be seen that no witness on being sworn can be compelled to "kiss the book."



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